

# ON A COLLECTION OF LAND- AND FRESHWATER MOLLUSCA AND A FEW MARINE MOLLUSCA

CHIEFLY COLLECTED BY DR. H. A. LORENTZ

FROM

NEW GUINEA, THE ARU ISLANDS, TIMOR AND BORNEO

BY

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(With plates IV—VIII.)

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## INTRODUCTION.

The majority of the Mollusca enumerated and described in the following pages, has been collected at the expeditions to New Guinea and the Aru Islands by Dr. H. A. LORENTZ in 1907 and 1909/10; also some species have been found on Timor and Borneo.

Dr. J. W. R. KOCH collected in 1904 (one species in 1903) some marine Mollusca and a few other ones; to these collections have been added some specimens by Mr. G. M. VERSTEEG, in 1912. As a rule, those specimens where no name of collector has been annexed, are from the first-named expeditions; I have mentioned the names of Dr. KOCH and Mr. VERSTEEG, when I received the specimens with their names; a few exceptions remain, as f. i. with the species of the genus *Pinna*, which were not accompanied by any indications of the persons who collected them; I suppose that according to the year 1903 on the labels, they should be still ascribed to Dr. KOCH.

The troubles of war and failing health are the reasons that I have not been able to make more anatomical researches.

I owe much thank to Mr. G. K. GUDE and Mr. PH. DAUTZENBERG, for assistance in naming doubtful forms, Mr. J. J. VERWYNEN has much obliged me, by the loan of books, from the rich library of TEYLER's Museum at Haarlem; by the aid of these persons I have avoided as much as possible, to describe as new species, such forms as are already described by my predecessors, but by the voluminous and much dispersed literature, it is nearly impossible always to avoid such mistakes, especially as not in every case the described species have been figured. For such cases I must invoke the indulgence of my fellow-conchologists and hope they will excuse me, on account of the unfavorable circumstances mentioned above.

## A. Land- and Freshwater-Mollusca.

## Class GASTROPODA.

## PULMONATA.

## Suborder Geophila.

## A. MONOTREMATA.

## Fam. ZONITIDAE.

*Xesta* Albers.1. *Xesta citrina* Linné.

LINNÉ. Syst. Nat. Ed. X, p. 771.

var. *columellaris* Beck.

V. MARTENS. Ostas. Landschn. p. 194, Pl. 7, fig. 2, 6, 8.

REEVE. Conch. Ic., Helix, fig. 482*b*, 485*b*.

TAPPARONE CANEFRI, Fauna Mal. New Guinea, p. 196.

TRYON. Man. of Conch. Ser. II, Vol. II, p. 73, Pl. 20, fig. 91, 95.

New Guinea. Alkmaar, Sept. 18, 1907; 20, 1909; Nov. 1909; Bivak Island, Jan. 16, 20, 1910; Febr. 19, 1910; March, 1910, July 8, 10, 14, 15, 17, 18, 22, 1907; Aug. 15, 23, 24, 1907; Sept. 15, 17, 24, 28, 1907; Oct. 1909; Geitenkamp, July, 20, 1907; Lorentz River, May, 9, 10, 11, 15—19, 1907; Sept. 5—12, 16, 1909; Pandanus Creek, May, 15, 1907; Sabang, June, 10—24, 28, 1907; July, 4, 1907; Oct. 5, 1912 (VERSTEEG leg.).

The specimens belong to a small form, they come very near to, but are not quite identical with var. *columellaris* Beck from Ceram, the shells being smaller, scarcely exceeding 30 Mill. in their largest diameter, though collected at very different times of the year, whereas V. MARTENS describes them as from 33 to 38 mill., they are slightly smoother, the purple umbilical patch, though present in several specimens; is wanting in the majority; the reddish top, though mainly present is much smaller. However I cannot see anything but a small form of this variety in the numerous specimens; they agree in the narrower last whorl and in the thicker shell. The colour is in most instances yellow, with a dark peripheral band and reddish apex, but some specimens are yellow or white, without that band. They may in part agree with var. *D.* of TAPPARONE CANEFRI, but as he gives no measurements, this cannot be made out with certainty. A few specimens from Alkmaar, remind the description of var. *apicata* v. Moellendorff (Proc. Mal. Soc. Lond. Vol. I, p. 234) but that variety ought to have the brown band only on the apical whorls and in the specimens under consideration, it extends still on the last whorl and leaves only part of that whorl free.

var. *fragilis* n. var. Pl. IV, fig. 1.

Shell rather small, thin, fragile, smooth and shining, with moderate growth-striae, violet-brown with a white apex, a white zone below the suture and it is sometimes also whitish near the aperture, a darker peripheral zone is present in some specimens.

Diam. maj. 31, alt. 21, apert. alt. 15, lat. 16 mill.

Lorentz River. Sept. 3—12, 1909.

This new variety comes in shape and colour rather near to var. *tiara* Beck, but the shell is much more glossy than specimens from Ceram and it is much thinner. Many of the specimens are broken, this is the case with the largest specimen, from which I took the measurements, moreover the shells have probably suffered from the alcohol, for especially after drying, large patches of a dull white colour, make their appearance. The number of specimens is about 20.

2. *Yesta cidaris* Lamarck.

LAMARCK. An. s. vert. Ed. II, Vol. VIII, p. 45.

REEVE. Conch. Ic. Helix, fig. 477 (tumens).

TRYON. Man. of Conch. Ser. II, Vol. II, p. 72, Pl. 19, fig. 79.

Timor. Koinini River, near Kupang, Aug. 21, 1909.

One specimen, not quite adult but very characteristic.

### Hemiplecta Albers.

1. *Hemiplecta crenocarinata* n. sp. Pl. IV, fig. 2.

Shell depressed, carinate, rather conical above, slightly convex below, narrowly perforate, the perforation partly covered, light brown, the top-whorls a little reddish, base slightly lighter near the centre; upper surface rather dull, basal one shining. Whorls about  $5\frac{1}{2}$ , each slightly convex above. Sculpture consisting of arched growth-lines and on the upper surface of very fine irregular hair-lines, the lower whorls with an impressed spiral line or groove, accompanying the keel at a little distance; between this line and the periphery, the sculpture is coarser, making the suture of median and the keel of last whorl slightly crenulate; a similar groove is visible on the basal surface, near the keel and the intermediate space is likewise sculptured coarser. Near the aperture the keel is less acute, partly by the disappearing of the spiral grooves; last whorl not descending. Aperture hatchet-shaped, upper margin straight, sharp, slightly convex, basal one regularly curved, slightly thickened and expanded, columellar margin more ascending, running without angle into the basal margin, still more thickened and even slightly triangular near the perforation, which it covers in part; the thickened margin is whitish.

Diam. maj. 21, alt. 11, apert. alt. (diagonally) 8, lat.  $11\frac{1}{2}$  mill.

New Guinea. v. Weel's Camp. May, 27, 1907.

This species, of which only one specimen has been collected, is nearly allied to *Nanina infelix* Smith (The Conchologist, Vol. II, p. 109; The Journ. of Conch. Vol. V, Pl. 2, fig. 7) but differs especially in the front view, the aperture in that species being more descending, more horizontal in the new one, moreover SMITH does not mention the hair-like striae of the upper surface, nor the crenulations of the keel. The shell is smaller though probably adult, as the lower part of the peristome is thickened and expanded, and the keel and accompanying spirals are less or not pronounced near the mouth.

2. *Hemiplecta* sp.

New Guinea. Resi Ridge, Aug. 30, 1907; Hellwig Mounts, 1000—1360 M. Oct. 13, 1909; 2500 M. Oct. 1909.

Under this head I have united 3 specimens, which, though nearly allied, are however

slightly different; they agree in being rather flat above, especially that from the first-named locality, and considerably more convex below, with a sharp keel, a narrow umbilicus or perforation and a hatchet-shaped aperture; the sculpture consists of conspicuous striae, stronger above the suture and the keel of last whorl, with waved intermediate striae, only visible under a strong lens, scarcely perceptible in another specimen, basal surface much smoother, so are the uppermost whorls in the first and third specimen, in the second they are slightly plicate. As to colour, they are of a lighter or darker brown tinge above, darker towards the suture and below the keel, the second specimen is the darkest and more uni-coloured. As the specimens have the appearance of being juvenile, which circumstance much diminished the possibility of identifying them with any of the described species at the same time it prevents me from describing them as new, the more so as the only specimen from each locality, has still its own characters.

3. *Hemiplecta densegranosa* n. sp. Pl. IV, fig. 3.

Shell subglobose, narrowly umbilicated, chestnut-brown, lighter below, around the umbilicus, with a narrow, slightly darker zone at the periphery, which is very bluntly carinate. Whorls 5, moderately convex, separated by a shallow suture, last whorl not descending. Nuclear whorls eroded in the largest specimen, smooth and shining in the young ones; sculpture of post-nuclear whorls consisting in the supra-peripheral part of shell of arched striae, much closer on the upper whorls, crossed by numerous spiral striae, which give to the shell a granular appearance, the granules being more elongated on upper whorls, nearly quadrate on last one, fading on the last third part of last whorl; basal part of shell, below the keel, smoother, glossy with remote striae and very fine, waved spiral striae, only visible under a strong lens. Aperture slightly oblique, rounded, except for being emarginated by the last whorl; peristome thin, columella reflected at the upper part and partly covering the narrow but pervious umbilical perforation; margins connected by a thin layer of enamel on the body-whorl.

Diam. maj. 36, alt. 26, apert. alt.  $18\frac{1}{2}$ , lat.  $18\frac{1}{2}$  mill.

New Guinea. Resi Ridge. Aug. 30, 1907; Hellwig Mounts, 1000—1360 M. Oct. 13; 2500 M. Oct. 1909.

Though the largest specimen seems to be not full-grown, I think it may be nearly so, and thus thought it fit to be named and described. It much resembles *H. foullioyi* Guill., which Tapp. Canefri thought to belong to *Nesta* (Fauna Mal. N. Guinea, Suppl. p. 37) and which BURNE (Proc. Mal. Soc. Lond. IX, p. 208, sq.) classified sub *Rhyssota*, on account of the general appearance of the animal and of some anatomical particulars. As the shell-characters of the species under consideration agree much better with *Hemiplecta* and the large specimen lacks the soft parts, I have located it in *Hemiplecta*. The shell differs from that of *foullioyi* by its much smaller size, its more globose shape, less convex whorls, which are not depressed near the suture and are separated by a much shallower suture; in *foullioyi* the whorls increase more rapid and the colour differs from the new species by a white peripheral band and a broad white zone round the umbilicus. The sculpture is very similar but the nuclear whorls of *foullioyi* are sculptured in the same way, though weaker, as the next whorls.



4. *Hemiplecta schumacheriana* Pfeiffer.

- PFEIFFER. Zeitschr. f. Malak., 1850, p. 70.  
 PFEIFFER. Mon. Helic. Vol. III, p. 111, Vol. IV, p. 110.  
 REEVE. Conch. Ic., Helix, fig. 379.  
 v. MARTENS. Ostas. Landschn. p. 230.  
 v. MARTENS, THIELE. Mitth. Zool. Mus. Berlin 1908, p. 261.  
 TRYON. Man. of Conch. Ser. II, Vol. II p. 43.  
 Borneo. Pontianak. July, 7, 1909.

This form has often been considered to be a variety of *H. densa* Ads., so by PFEIFFER (Mon. Hel. Vol. III) v. MARTENS (Ostas. Landschn.) but afterwards these authors separated it (PFR. Mon. Hel. Vol. IV); (v. MARTENS, THIELE l. c.); for the only specimen, being an empty shell, I have followed this latter view.

**Macrochlamys** Benson.1. *Macrochlamys novoguineensis* n. sp. Pl. IV, fig. 4.

Shell small, depressed, perforated, brownish, shining, smooth, but sculptured under a strong lens with crowded, spiral striae on the whole surface, except the uppermost  $\frac{1}{2}$  whorl, which seems to be quite smooth, spire slightly convex. Whorls 4, scarcely convex, separated by a shallow suture, which is bordered by an infrasutural, narrow, whitish depression, suture not descending; base of shell slightly depressed, with a very narrow perforation, nearly closed by the columella. Aperture slightly oblique, depressedly lunate, peristome thin, straight, columellar margin oblique, dilated above and reflected over the perforation.

Diam. maj. 5, alt. 3; apert. alt.  $2\frac{1}{6}$ , lat.  $2\frac{1}{2}$  mill.

New Guinea, Lorentz River. May, 1907.

This only specimen is characterized by its spiral sculpture, which is much fainter than in my *M. martini*, the thin epidermis is iridescent, but I think only by the action of the preservative, so I have not mentioned this character in the description.

**Helicarion** Férussac.1. *Helicarion* sp.

New Guinea. Sabang, Oct. 5, 1912. Leg. VERSTEEG.

One specimen which I could not identify with one of the known species, is too young for description, the peristome being membranaceous, is mentioned on account of the fine animal, which has a whitish colour with a brown back. By trying to remove the shell, the columellar part was damaged. The shell-lobes are strongly sculptured with coarse warts. The diameter of shell is about 10 mill., the number of whorls scarcely 3.

2. *Helicarion* sp.

New Guinea. Lorentz River. Sept. 22, 1909.

This specimen has still more the character of being quite young, the largest diameter being 5 mill., with about 2 whorls. I have only mentioned it, to ascertain the occurrence of the genus, still rarely met with in New Guinea.

**Sitala** H. Adams.1. *Sitala gradata* n. sp. Pl. IV, fig. 5.

Shell subglobose, conoidal, gradate, rather strong for the genus, perforate, rather shining, colour nearly white (perhaps by erosion, the shell being dead), whorls about 6, very convex, roundedly angular at the shoulder, separated by a deep suture, sculptured with faint, nearly perpendicular growth-striae. Spire rather high and acute in outline, apex acute. Aperture scarcely oblique, lunate, peristome thin; columellar margin long, straight, only a little oblique, thickened, broader and reflected above, nearly covering the narrow perforation.

Diam. maj.  $3\frac{1}{2}$ , alt.  $3\frac{1}{4}$ , apert. alt. 2, lat.  $1\frac{1}{2}$  mill.

New Guinea, Resi Ridge, Aug. 30, 1907.

The only specimen resembles *S. subglobosa* Soos (Annales Musei Nationalis Hungarici, Vol. II, 1911, p. 352, fig. 8) but is smaller, though it has at least a whorl more, the whorls are more convex, the suture is deeper, the shell consequently gradate, the columella nearly perpendicular and longer. I see no trace of spirals.

2. *Sitala lorentzi* n. sp. Pl. IV, fig. 6.

Shell conical, rounded at the base, keeled at the periphery, thin, smooth, shining, subperforate, light brown, with whitish apex. Whorls nearly 6, convex, with a deep, margined suture, last whorl conspicuously keeled, sculpture consisting of faint growth-striae. Aperture scarcely oblique, roundedly quadrangular, peristome thin, straight, columellar margin straight, nearly perpendicular, running with a rounded angle into the basal margin, thickened, its upper part reflected over and nearly concealing the very narrow perforation.

Diam. maj.  $4\frac{1}{4}$ , alt.  $4\frac{1}{4}$ , apert. alt. 2, lat. 2 mill.

New Guinea, Resi Ridge, Aug. 30, 1907.

Allied to *S. anthropophagorum* Hedley (Proc. Linn. Soc. N. S. W. 2<sup>d</sup> Ser. Vol. IX, 1894, p. 385, Pl. 24, 25, 26, fig. 1, 3, 21, 24), but smaller, higher in proportion, columella higher and more perpendicular, keel fainter, no trace of spirals.

3. *Sitala fragilis* n. sp. Pl. IV, fig. 7.

Shell conoid, with rounded base, faintly keeled at periphery, keel visible at penultimate whorl, just above suture, very faint near aperture; shell very thin, smooth, dull, very light horn-coloured. Whorls  $4\frac{1}{2}$ , slightly convex, with a shallow suture, apex blunt. Sculpture consisting of microscopic hair-lines, with faint spirals on the base, rather conspicuous near the umbilical region. Aperture scarcely oblique, lunate, peristome thin, fragile, straight, columellar margin concave, thickened, reflected, especially above and nearly closing a very small perforation.

Diam. maj. 4, alt.  $3\frac{1}{2}$ , apert. alt.  $2\frac{1}{6}$ , lat. 2 mill.

New Guinea. Lorentz River, Sept. 5—12, 1909, Oct. 10, 1907.

Allied to *S. propinqua* Tapp. Can. (Fauna Mal. N. Guinea, Suppl. p. 41, Pl. I, fig. 6), but whorls more convex, apex blunt, keel fainter, especially near aperture, base with spirals, especially near perforation.

**Trochomorpha** Albers.1. *Trochomorpha planorbis* Lesson.

- LESSON. Voy. Coquille. Zool. II, p. 312, Pl. 13, fig. 4.  
 v. MARTENS. Ostas. Landschn. p. 249, Pl. 13, fig. 4, (var. Lessoni).  
 TAPP. CANEFRI. Fauna Mal. New Guinea, p. 89.  
 BOETTGER. Bericht Senckenb. naturf. Ges. 1891, p. 262.  
 TRYON. Man. of Conch. Ser. II, Vol. III, p. 82, Pl. 16, fig. 78—82.

New Guinea. v. Weel's Camp. May 29, Sept. 18, 1907; Lorentz River, May 11, 1907; Sabang, June 5, 1907; Geitenkamp, July 20, 1907; Bivak Island, Sept. 15, 1909; Van der Sande River, Sept., 10, 1909.

The specimens have on their base faint spiral striae and so belong to var. *Lessoni* v. Mart. or *Tr. approximata* le Guill. (Rev. Zool. 1842, p. 139), BOETTGER, l. c. seems to be of opinion that this form represents the type of LESSON. Both authors are inclined to the suggestion that according to the differences in sculpture, one ought to distinguish 3 species. In the specimens from N. Guinea, the spiral striation of the base is very variable, in some specimens scarcely traceable, this circumstance certainly does not plead for that view, and so I have left them with Lesson's name.

## Fam. HELICIDAE.

**Camaena** (Alb.) Pilsbry & v. Möllendorff.1. *Camaena gudei* n. sp. Pl. IV, fig. 8.

Shell thin, depressedly-conoid, narrowly umbilicated, last whorl faintly keeled, conspicuously dilated towards aperture, dark reddish-brown, with an inconspicuous, narrow, darker, peripheral band, and a faint lighter zone below it. Whorls about  $4\frac{1}{2}$ , slightly convex, separated by a shallow suture, deeper on last whorl and suddenly descending at a little distance from the aperture. Apex blunt, nuclear whorls large, with riblike striae, uppermost part however slightly eroded. Sculpture of post-nuclear whorls with the same riblets above and below, with oblique rugosities, most conspicuous on last whorl, above periphery; base of shell with irregular rugosities, which have however a more spiral direction; aperture oblique, depressedly semi-elliptical, with a slightly thickened, strongly reflected peristome, of a purple-brown colour; columellar margin oblique, running insensibly into the basal margin, thickened and triangularly dilated above, and for  $\frac{2}{3}$  covering the narrow, deep umbilicus.

Diam. maj. (incl. perist.) 34, alt. 25, apert. alt. (diagonally, without perist.)  $13\frac{1}{2}$ , lat. 16 mill.

New Guinea. Hellwig Mounts. Oct. 1909. 2500 M.

I know no nearly allied species; the only specimen contains the dried soft parts, its yellowish epidermis has a tendency to become loosened and causes some accidental yellow spots on the shell. I have named it in honour of Mr. G. K. GUDE, who often has assisted me in comparing doubtful specimens.

**Planispira Beck.**1. *Planispira (Cristigibba) tortilabia* Lesson.

LESSON. Voy. Coquille, Zool. Vol. II, p. 311, Pl. 13: fig. 1.

TAPP. CANEFRI. Fauna Mal. New Guinea, p. 171.

PILSBRY. Man. of Conch. Ser. II, Vol. VI, p. 294.

Aru Islands. Fenuabori River. Dec. 5, 1907.

Of the 3 specimens one is young, one eroded, the third, though a dead shell, belongs by its rosy peristome and (slightly bleached) upper whorls, to the typical form A. var.  $\beta$ . of TAPP. CANEFRI (l. c. p. 172).

*Forma B.* Tapparone Canefri.

TAPP. CANEFRI. l. c. p. 172.

REEVE. Conch. Ic., Helix, fig. 498.

New Guinea. Lorentz River. Sept. 5/12, 1909.

The specimens vary much in size and colour, the largest full-grown specimen has a diam. maj. of 22 mill., inclusive of the peristome, and should be typical, according to the measurements of PILSBRY, but the peristome is more expanded than in the specimens from the Aru-isles, which are also larger (diam. maj.  $23\frac{1}{2}$  mill.); the smallest specimen reaches only  $18\frac{1}{2}$  mill. The peristome is white or rosy, the specimens are bandless, in most cases with 2 brown bands or with one large brown band, occupying the space of the usual 2 bands.

2. *Planispira (Cristigibba) plagiocheila* Tapp. Canefri.

TAPP. CANEFRI. Fauna Mal. N. Guinea, p. 174, Pl. 5, fig. 4-7; Pl. 7, fig. 6.

PILSBRY. Man. of Conch., Ser. II, Vol. VII, p. 295, Pl. 52, fig. 82-85.

New Guinea. Bivak Island, July. 12, 1907; Sabang, July 15, July 18, Sept. 18, 1907; Lorentz River, Sept. 25, 1909; Alkmaar, Nov. 1909.

Varying slightly in size, the largest diameter differing from about 17 to 18 mill. and in colour, the upper whorls being in some specimens rosy; the last whorl is more or less dark brownish, with a lighter yellowish zone below the suture, and the base is likewise lighter. I find no distinct bands but the upper part of the brown zone is slightly darker. The velvety epidermis is in most cases preserved, but it is very difficult to see the hairs.

var. *albolabiata* n. var.

Much smaller than the type, uniformly whitish, epidermis yellowish, peristome white. Diam. maj. (of largest specimen) 14, alt. (of last whorl)  $7\frac{1}{2}$  mill.

New Guinea. Alkmaar, Aug. 16, 1907; Lorentz River, Sept. 25, 1909.

I can see no more than a variety of *P. plagiocheila* in these shells, they agree in shape with the type, the epidermis has the same structure. The specimens from the Lorentz-river are quite young and so it is uncertain if the peristome should be white if full-grown, as they agree however in every other respect, with the specimens from Alkmaar, I think they may be united, the more so, as in so many of the species of *Cristigibba*, the colour of the peristome proves to be variable.



3. *Planispira (Cristigibba) moluccensis* Pfeiffer.

PFEIFFER. Zeitschr. f. Malak., 1850, p. 84.

PFEIFFER. Mon. Helic. Vol. III, p. 245.

v. MARTENS. Ostas. Landschn. p. 392 (semirasa).

PFEIFFER. Nov. Conch., Vol. IV, p. 38, Pl. 117, fig. 4—6 (semirasa).

TAPP. CANEFRI. Fauna Mal. N. Guinea, p. 173 (semirasa).

PILSBRY. Man. of Conch. Ser. II, Vol. VI, p. 295, Pl. 46, fig. 71—73 (semirasa).

SMITH. Proc. Mal. Soc. Lond. Vol. II, p. 120.

SMITH. Ann. Mag. Nat. Hist. Ser. 6, Vol. XX, 1897. p. 411.

Aru Islands. Fenuabori River. Dec. 5, 1907.

The specimens are 2-banded, though the lower one is sometimes faint and in most cases lighter than the broad upper one, the peristome seems to be bleached in many specimens, but the rosy colour is always traceable. I have made use of the eldest name, *moluccensis*, as SMITH has done, since the species should have been found on Batchian, and so the argument that the name *moluccensis* should be improper has lost its value, even if such an argument should suffice to abolish the eldest name. At all events v. MARTENS and not MOUSSON is the author of the name *semirasa*, as MOUSSON has neither described the species nor published its name. The hairs of the collected specimens are lacking, but the scars are very conspicuous.

4. *Planispira (Cristigibba) rhodomphala* Tapp. Canefri.

TAPP. CANEFRI. Fauna Mal. N. Guinea. p. 176, Pl. 4, fig. 12, 13.

PILSBRY. Man. of Conch. Ser. II, Vol. VI, p. 297, Pl. 48, fig. 7, 8.

A. *Typica*.

New Guinea, near Bivak Island, May, 1907; Sept., 24, 1912. (leg. VERSTEEG).

Only these specimens are quite typical; the species is very variable in many respects, many specimens from other localities are nearly typical, but differ in being much less rose-tinted, they agree however in the rosy colour of the peristome, I have separated them into two colour-varieties:

*a. var. ex col. fasciata* n. var.; nearly typical but only the peristome and a smaller space behind it along the suture rosy, with two brown bands.

New Guinea. Alkmaar, July—Aug.; Aug. 9, 16, 1907; Van der Sande River, Sept. 10, 1909, from the crop of a pigeon; Bivak Island, May 1907; July 10, 12, 13; Oct. 1909; Lorentz River, May 15—19, 1907; Sept. 22, 1909; Sabang, June 13—24, 20—30, July 18, Sept. 18, 1907; Oct. 5, 1912; (leg. VERSTEEG).

*b. var. ex col. simplex* n. var. Nearly quite white, but with a rosy peristome, and the space behind the peristome along the suture, as in the preceding var.

New Guinea. Alkmaar, July—Aug., Aug. 9, 16, 1907; near Bivak Island, May, 1907; Van der Sande River, Sept. 10, 1909, from the crop of a pigeon; Lorentz River, Sept. 16, 1907; Regen Island, Febr. 16, 1910; Resi Ridge, Aug. 30, 1907; Sabang, June 20—30, July 4, Sept. 18, 1907; Van Weel's Camp June 23, 1907.

B. *var. nigrolabiata* n. var. Colour more typical, with the upper and umbilical zone rosy, both with black peristome and exteriorly dark near the peristome.

New Guinea. Alkmaar, Sept. 20, 1909; Lorentz River, Sept. 5—12, 20, 1909; Sabang, July 18, 1907; Van Weel's Camp, June 23, 1907.

This variety is very variable in its banding, most specimens are two-banded, one from Sabang has a narrow third band below the upper one, two are bandless, approaching the var. *simplex*; the colour of the peristome and environment is in most cases as deep black as can be expected in shells, but one or two specimens from Sabang, amongst which a *trifasciate* var., which is not quite adult, have it more dark purple.

C. var. *albolabiata* n. var. without any rosy markings, the peristome, as far as can be made out, white.

New Guinea. Lorentz River. Sept. 16, 1909.

The specimens have the peristome rather thin, but it seems to be improbable that this circumstance should account for the white colour, as the rosy tints are lacking on the whole shell.

### Trachiopsis Pilsbry.

#### 1. *Trachiopsis torresiana* Hombron & Jacquinot.

HOMBRON & JACQUINOT. Ann. Sciences Nat. XVI, 1841, p. 63.

LE GUILLOU. Rev. Zool. 1842, p. 138 (*delessertiana*).

GRAY. New Zealand, Pl. 1, fig. 6, 7, (Taranaki).

CROSSE. Journ. de Conch. 1868, p. 172, Pl. 6, fig. 6a (*leucolena* var.  $\beta$ ).

TRYON. Man. of Conch. Ser. II, Vol. IV, p. 66, Pl. 14, fig. 78 (Taranaki).

New Guinea. Merauke, 1904. Dr. KOCH leg.

In the synonymy here mentioned, I have with the exception of the quotation of TRYON, followed ANCEY (Journ. de Conch. Vol. LII, 1904, p. 295) and HEDLEY (Proc. Linn. Soc. N. S. W., Vol. 41, 1916, p. 713). PILSBRY in his Guide to the study of Helices, Vol. IX, of the Man. of Conch. Ser. II, p. 114, does not mention *H. leucolena* Crosse, and locates *Trachiopsis* as a section of *Planispira*. As I think the resemblance with *Planispira* is not very obvious, I have mentioned this section as a genus. Mr. PH. DAUTZENBERG has kindly compared the specimens with the types of *H. leucolena* now in his possession, and stated that the differences with var.  $\beta$  are very slight, that only the ribs of the last whorl are slightly coarser in the specimens collected by Dr. KOCH. As a variety of *delessertiana*, Ancey mentions a var. *major*, which should be the same as *leucolena* Crosse *typica*. The measurements of the specimens under consideration, vary from 15 to nearly 20 mill. In another tube are a few specimens from the same locality, differing from the other ones by being considerably flatter above, the whorls are less rounded, with a shallow suture, by having a slightly darker colour, partly still coarser ribs, especially on the base, and a more oblique columella, as these characters are partly gradual and only the flatter spire with its consequences (flatter whorls and shallower suture) proves to be constant, I think it is provisionally not advisable to describe it as a new species, but wish to name it:

var. *dautzenbergi* n. var., Pl. V, fig. 1.

Shell with spire and whorls flatter, suture shallow.

Diam. maj.  $19\frac{3}{4}$ , alt. 11; apert. alt. diagonally 9, lat. (incl. perist.) 10 mill.

Named in honour of Mr. PH. DAUTZENBERG, who has so greatly assisted me with these doubtful forms.

**Chloritis Beck.**1. *Chloritis (s. str.) circumdata* Férussac.

FÉRUSSAC. Hist. Moll. Pl. 77, fig. 1.

PFEIFFER. Mon. Helic. Vol. I, p. 387.

REEVE. Conch. Ic. Helix, fig. 470.

TAPP. CANEFRI. Fauna Mal. New Guinea, p. 170.

PILSBRY. Man. of Conch. Ser. II, Vol. VI, p. 246, Pl. 52, fig. 74—76.

VERNHOUT. Notes Leyden Museum, Vol. 35, p. 141, Pl. 7, fig. 2.

Aru Islands. Dobo, Aug. 9, 1909; Fenuabori River, Dec. 5, 1907.

The specimens from the first named locality are smaller than those from the latter one, amongst these is a very large specimen, with a diam. maj. of 37 mill., which in the less descending aperture, approaches *C. maforensis* Tapp. Can., but in other respects seems to belong to *circumdata*; as the last whorl has repeatedly been broken and repaired, this may perhaps account for the aberrant shape, as to size, this may be due to the same circumstance, as the specimen may have continued its growing-process after breakage. Moreover one finds often specimens being considerably smaller or larger than usual, in many species of different genera. It seems not to be advisable to give a varietal name to a single specimen of irregular development. The shell is rather worn.

2. *Chloritis (Sulcobasis) beatricis* Tapparone Canefri.

TAPP. CANEFRI. Fauna Mal. N. Guinea, p. 163, Pl. 4, fig. 14, Pl. 8, fig. 16.

PILSBRY. Man. of Conch. Ser. II, Vol. VI, p. 260, Pl. 36, fig. 19.

var. *depressa* n. var. Pl. V, fig. 2.

Kobelt. Martini-Chemn. Ed. II, Vol. I, Abth. 12, IV, p. 646, Pl. 186, fig. 1, 2.

Shell considerably more depressed than the type, with rather flat spire and last whorl descending near aperture, upper margin of peristome more rounded.

Diam. maj. (of large specimen) 56, alt. 40; apert. alt., incl. perist.  $30\frac{1}{2}$ , lat.  $26\frac{1}{2}$  mill." " (smallest " ) 42, » 27; " " " "  $21\frac{1}{2}$ , " 21 "

New Guinea. Alkmaar, July—Aug. 1907; Sept. 20, Nov. 1909; Bivak Island Jan. 19, Febr. 1910; Geitenkamp, July 20, 1907; Lorentz River, May 19, 1907; Rivier-kamp, Febr. 5, 1910; Van Weel's Camp, May 27, 1907; Kloof-bivak, Oct. 19, 1912 (leg. VERSTEEG).

I have considered these specimens as a variety, though the differences are rather important, the whole shell is much more depressed, which is especially due to the less elevated spire, which in the specimens under consideration may be called flattened, but also the last whorl is more depressed and descends near the aperture; the upper margin of the peristome is nearly straight in the figure of T. CANEFRI, curved in the variety; the measurements of T. CANEFRI are: diam. maj. 52, alt. 35 mill.; but his figure has an altitude of about 41 mill., if taken from the spire to base of aperture; on the contrary the specimens agree in nearly every respect with KOBELT's fig. (l. c.) even as far as concerns these measurements; unfortunately CANEFRI gives no basal view, in the front view it appears that the umbilicus would be narrower than in KOBELT's specimen, which agrees also in this particular with those enumerated above.



Mr. GUDE thinks the specimens belong to *C. beatricis*, but on account of the differences, I think it is inevitable to apply at least a varietal name, and I quoted KOBELT's figure for it, though the colour of his specimen is much lighter. However a dried specimen that has been preserved a long time in alcohol, has about the same colour. A comparison with the type-specimens should be desirable, to make out if the 19 specimens of TAPP. CANEFRI are all alike; though the collected specimens vary considerably in size, as may be seen by comparing the above measurements, they agree in nearly every other respect, the aperture is mainly higher than the figure of KOBELT.

3. *Chloritis (Austrochloritis) argillacea* Férussac.

FÉRUSAC. Hist. Moll. Pl. 26, fig. 1—3.

PFEIFFER. Mon. Helic. Vol. I, p. 320.

REEVE. Conch. Ic., Helix, fig. 415.

v. MARTENS. Ostas. Landschn. p. 273.

TAPP. CANEFRI. Fauna Mal. New Guinea, Suppl. p. 17.

WIEGMANN. Zool. Ergebn. Reise N. Ost-Indien. Vol. III, p. 171, Pl. 13 f. 1—9, Anat. (Gen. Hadra).

PILSBRY. Man. of Conch. Ser. II, Vol. IX, p. 121, 122, Pl. 28, fig. 5—9.

New Guinea. Bivak Island. May, 1907.

As far as I am aware, this species has not yet been recorded from the mainland of N. Guinea, the nearest locality being the island Rawak near Waigeu. The collection contains some fine specimens with the soft parts. WIEGMANN has, on account of his anatomical researches, located the species in *Hadra*, but PILSBRY (l. c.) persists in locating it in *Chloritis*; as long as no more of the species are known anatomically, I prefer to follow PILSBRY.

**Albersia** H. Adams.

1. *Albersia zonulata* Férussac.

FÉRUSAC. Hist. Moll. Pl. 15, fig. 1, 2.

PFEIFFER. Mon. Helic. Vol. I, p. 261.

REEVE. Conch. Ic. Helix, fig. 400.

TAPP. CANEFRI. Fauna Mal. New Guinea. p. 185.

PILSBRY. Man. of Conch. Ser. II, Vol. VII, p. 91, Pl. 19, fig. 6—8.

Aru Islands. Dobo, Aug. 29. 1909; Fenuabori River. Dec. 5, 1907.

One specimen from Dobo and those from the Fenuabori-river are larger than the type, which is said to have a largest diameter of 26 mill. (see the fig. of FÉRUSAC), one of them reaching 30 mill., the other ones not surpassing 29 mill.; I doubt if they deserve the varietal name *Reclusiana* Le Guillou, as has been suggested by PILSBRY (l. c.) as the copy of GUILLOU's description by PFEIFFER (l. c. p. 334) and TAPP. CANEFRI (l. c. p. 186) mention a diameter of 26—27 mill. for that form; PFEIFFER's var.  $\beta$  *major*, represented by the quoted figures of REEVE and PILSBRY (fig. 6) has a diameter of 30 mill.

**Papuina** v. Martens.

1. *Papuina pileus* Müller.

MÜLLER. Hist. Verm. p. 80.

PFEIFFER. Mon. Helic. Vol. I, p. 323.



REEVE. Conch. Ic., Helix, fig. 493.

TAPP. CANEFRI. Fauna Mal. New Guinea, p. 137.

PILSBRY. Man. of Conch. Ser. II, Vol. VII, p. 24, Pl. 8, fig. 42—45.

Aru Islands. Fenuabori River, Dec. 25, 1907.

The only specimen, which is slightly worn, belongs to the colour-variety without bands on the upper surface.

## 2. *Papuina blainvillei* Le Guillou.

LE GUILLOU. Rev. Zool. 1842, p. 140.

PFEIFFER. Mon. Helic. Vol. I, p. 327.

REEVE. Conch. Ic., Helix, fig. 419.

TAPP. CANEFRI. Fauna Mal. New Guinea, p. 129, Pl. 3, fig. 4, 5.

PILSBRY. Man. of Conch., Ser. II, Vol. VII, p. 25, Pl. 3, fig. 59, 60.

Aru Islands. Fenuabori River, Dec. 25, 1907.

Two of the specimens may belong to var.  $\beta$  of TAPP. CANEFRI, with rather flat whorls and low spire, the third has the spire higher, but the whorls are still less convex than in the type. The lilac colour of the columella (though partly bleached) is characteristic. According to the elucidations of TAPP. CANEFRI and PILSBRY the shell is very variable in altitude.

## 3. *Papuina lorentzi* n. sp. Pl. V, fig. 3.

Shell depressed, acutely keeled, conical above, convex below, narrowly umbilicated, tawny, with a very narrow whitish line, occupying the keel, visible on the last whorl and another narrow, blackish line just below the suture of last whorl, fainter on part of penultimate whorl. Whorls about 5, slightly convex above, especially the apical ones, which are slightly papillary, base a little concave near the keel, then convex; the shell if seen from above or below, has an irregular outline, the last part of last whorl being considerably laterally compressed, for more than one third of its circumference, scarcely descending just behind the aperture. Apex smooth, sculpture of subsequent whorls consisting of fine growth-striae and especially on the upper part of last whorl of some oblique malleations; base with the striae slightly coarser and with rather irregular, shallow, spiral lines or grooves. Aperture oblique, depressed, triangularly ovate; peristome blackish, upper margin slightly expanded, basal margin a little more, with an angle at the periphery, columellar margin short, triangularly reflected and partly covering the rather narrow umbilicus, the margins are united on the body-whorl, by a thin layer of enamel.

Diam. maj. 36, alt. 21; apert, alt. diagonally 14, lat. ? mill. (alcohol).

" " 35, " 22; " " " 15, " 18 " .

New Guinea. Near Bivak Island, Febr. 1910; Sabang-camp, June 28/30 1907; Resi Ridge, Aug. 30, 1907; Alkmaar, Sept. 18, 1907.

The specimens vary in altitude, as may be seen from the above measurements, and in size; moreover one of the specimens from Sabang-camp has a rosy peristome and the black line below the suture is wanting, as I think this is not merely due to being slightly bleached, the typical colours being recognizable in the much more bleached specimen from Bivak Island, I wish to call it:

var. *roseolabiata* n. var.

This species seems to be allied to *P. bevani* Braz. in HEDLEY's. Land Moll. Fauna of British New Guinea (Proc. Linn. Soc. N. S. Wales, 1891, p. 85, Pl. 11, fig. 22, 23) but that species, as far as I can judge from the description and figure, is still larger and much flatter, with a black keel but no infra-sutural line.

4. *Papuina tomasinelliana* Tapparone Canefri.

TAPP. CANEFRI. Fauna Mal. New Guinea, p. 148, Pl. 4, fig. 1, Pl. 5, fig. 1, Pl. 7, fig. 3, Pl. 8, fig. 6, 12.

PILSBRY. Man. of Conch. Ser. II, Vol. VII, p. 44. Pl. 7, fig. 27, 28.

New Guinea. River Camp, Febr. 2, 1910; Van Weel's Camp, May 27, June 6, 1907; Sabang, June 20—30, July 20, 1907; Bivak Island, June, July, Aug. 23, 1907; Alkmaar, July, Aug. 1907; Lorentz River, Sept. 25, 1909.

The specimens are without exception larger than the type of TAPP. CANEFRI, a specimen from Alkmaar reaching even 43 mill. in diameter and so surpassing considerably the largest specimens recorded by v. MÖLLENDORFF (Proc. Mal. Soc. Lond. Vol. I. p. 237), whose largest specimen measured 39 mill., moreover he calls them var. *Maclayana* Braz., uniting the two forms, without mentioning in how far his specimens are malleated, as *P. maclayana* Braz. (Proc. Linn. Soc. N. S. W. Vol. X, p. 841) must be. The specimens under consideration, differ in this respect from my only specimen of *P. maclayana*, which has the last whorl not sub-constricted, as is the case with *P. tomasinelliana*. I was inclined to distinguish the specimens as forma *major*, but they vary from a trifle larger than the type, to 43 mill., without distinct limits. In other respects they vary in the distinctness of the bands and in being more or less depressed. PILSBRY (Man. of Conch., Ser. II, Vol. IX, p. 344) states on the authority of Beddome, that *P. plurizonata* Ads. & Rve. should be an elder name for *tomasinelliana*, but as a comparison with his figure (Man. of Conch. Ser. II, Vol. VII, pl. 59, fig. 4, 5) is not convincing, I have not adopted this view.

5. *Papuina hellwigensis* n. sp. Pl. V, fig. 4.

Shell small, depressedly trochoidal, nearly equally convex above and below the rather blunt peripheral keel, yellowish, the upper whorls lighter than the last one, with a red-brown line on the keel; shell shining, with fine striae or growth-lines. Whorls about  $4\frac{1}{2}$  (spire slightly damaged) slightly convex, separated by a well-marked suture, which is slightly crenulated, as well as the keel, by the sculpture being stronger there; last whorl convex below, scarcely descending behind aperture, impressed round a nearly imperceptible perforation. Aperture oblique, rounded-rhomboidal, peristome thin, slightly expanded, (upper margin broken) whitish, columellar margin purplish, more dilated, spread over and nearly closing the perforation, margins connected by a thin layer of enamel, purplish around the columella.

Diam. maj. 13, alt. 10; apert. alt. (diagonally) 6, lat. 7 mill.

New Guinea. Talk, Hellwig Mountains. Sept. 5, 1907.

This small species though slightly damaged and scarcely quite adult, the peristome being too thin in comparison with other species, is very interesting, I know no species with

which to compare it, it has some superficial resemblance with some of the species of *Dendrotrochus*, as enumerated by PILSBRY in his „Guide to the study of Helices”, pag. 143, but the animal does not belong to this group, having no mucous pore, as that genus ought to have, according to HEDLEY's inquiries (Records of Australian Museum, Vol. II, p. 90, Pl. 21), and the conchological characters are quite different, on closer examination. Only one specimen.

6. *Papuina lituus* Lesson.

LESSON. Voy. Coq., Zool. p. 309.

PFEIFFER. Mon. Helic. Vol. I, p. 326

PFEIFFER. Martini-Chemn. Conch. Cab. Ed. II, Helix, Vol. I, p. 433, Pl. 151, fig. 3, 4.

TAPP. CANEFRI. Fauna Mal. New Guinea, p. 138.

PILSBRY. Man. of Conch. Ser. 2, Vol. VII, p. 37, Pl. 10, fig. 77, 78.

ROBSON. Trans. Zool. Soc. London, Vol. XX, 1914, p. 296, fig. 10.

New Guinea. Bivak Island, July 10, 1907; Lorentz River, May 4, 1907; Sept. 5/12, 1909; Alkmaar, Sept. 20, 1909; Van Weel's Camp, May 27, 1907.

The specimens have no band at the periphery, being unicoloured, more or less dark yellowish-brown, with rosy peristome (in one bleached specimen blackish); they scarcely agree with the quoted figures of PFEIFFER and PILSBRY, which are flatter, however TAPP. CANEFRI states a considerable degree of variability in shape, size and colour of shell and aperture. I have united the specimens agreeing in colour, though in shape they approach often the next species, being however generally flatter below. I am the more so inclined to name them *lituus*, as the genitalia of a specimen from the Lorentz-river, though of a juvenile appearance, agree with the figure of ROBSON (l. c. fig. 10), especially in the long penis retractor, on which ROBSON lays much stress. I owe the suggestion that the specimens should belong to *P. lituus* to Mr. DAUTZENBERG.

7. *Papuina taumantias* Tapparone Canefri.

TAPPARONE CANEFRI. Fauna Mal N. Guinea, p. 141, Pl. 3, fig. 13, 14.

PILSBRY. Man. of Conch. Ser. II, Vol. VII, p. 39, Pl. 5, fig. 85, 86.

New Guinea. Lorentz River, May 4, June 13, 1907; Bivak Island, July 11, Sept. 6, 1907; Sept. 27, 1912 (VERSTEEG leg.); Van Weel's Camp, May 27, 1907.

I am not quite certain that this species has been well-identified, the colour agrees apparently better with that of *P. ridibunda* Tapp. Canefri; but the shells are with very few exceptions, considerably larger. They vary in colour, in having more or less bands and in the colour of the aperture, which is blackish, rosy or whitish, the shape is variable, the spire being more or less depressed; the genitalia are considerably different from the figure of TAPPARONE CANEFRI (l. c. Pl. 6, fig. 4), the penis being club-shaped, without flagellum, and resembles more the figure of those parts, given by ROBSON for *P. lituus*, (see under that species), but the penis retractor is so much shorter, that the identity is quite excluded. One should be inclined to think that the figure of TAPPARONE CANEFRI does not represent the genitalia of *taumantias*, but that they have been changed with those of another species, or that the present species is an undescribed form. For the moment I judge it better to accept



the identifications of GUDE and of DAUTZENBERG, who both consider these specimens to belong to *P. taumantias*.

### Amphidromus Albers.

#### 1. *Amphidromus contrarius* Müller.

MÜLLER. Hist. Vermium, p. 95.

v. MARTENS. Ostas. Landschn. p. 363, Pl. 21, fig. 7a, 7b, 7c, 10.

PILSBRY. Man. of Conch. Ser. II, Vol. XIII, p. 210, Pl. 65, fig. 22—27.

New Guinea. Bivak Island, May, 1907.

It is very strange to find a specimen of *Amphidromus* in a New-Guinean collection of mollusca, as this genus, as far as I am aware, has never been found on that island; it is still stranger that it is the well-known *A. contrarius*, the type of which was only known from Timor and Rotti; however the identification is not doubtful; the only specimen agrees sufficiently with fig. 7c of v. MARTENS, fig. 23 of PILSBRY, also with my specimens from Samau near Timor, moreover the particulars of the aperture, of which PILSBRY says: „Parietal callus thin, showing the bands through, thickened at the edge below and near the posterior angle, where there is a subtriangular tubercle, separated from the termination of the outer lip; by a deep but narrow channel, which continues along the suture inside” (l. c. Pl. 68, fig. 25), fully agree. If the label dit not give the special locality with date, one might doubt if the specimen had really been found in New Guinea, now one must think, the specimen has been transported by some means from its common stock. It is not probable that the same species will have lived on Timor and New Guinea, far from the coast, without intermediate localities, under normal circumstances. The shell contains the soft parts.

### Calycia Adams.

#### 1. *Calycia crystallina* Reeve.

REEVE. Conch. Ic., Bulimus, fig. 194.

TAPP. CANEFRI. Fauna Mal. New Guinea, p. 100.

PILSBRY. Man. of Conch., Ser. II, Vol. XIV. p. 20, Pl. 4, fig. 16—18.

New Guinea. Lorentz River. Sept. 5—12, 1909.

The surface of the specimens has suffered from the action of formalin, and especially in one younger specimen, the shell has a few opaque, white, spiral lines, but otherwise it agrees sufficiently with the figures and a specimen in my collection.

PILSBRY has since located this genus amongst the *Zonitidae*, on account of the anatomical researches of SCHACKO (Archiv für Naturgesch. 33, 1897, p. 43, Pl. 9) but regrets that SCHACKO has not mentioned if the species possesses a pedal groove, though the figure seems to indicate it. Mr. ROBSON has recently (Transact. Zool. Soc. Lond. Vol. XX, 1914, p. 289) followed PILSBRY. After examining the preserved animals I am in doubt if this view be right, in the front part of the sides, near the head, a groove is distinguishable, but more behind, only a shallow, irregular line may be seen, however quite different from what I find in *Xesta*



or other Zonitoids; moreover there is no trace of a caudal pore. Under these circumstances, I have provisionally located the genus at the end of the *Helicidae*, without being convinced that this is its permanent restingplace, as I have no sufficient materials and experience, for a satisfying decision.

*B.* DITREMATA.

Fam. VAGINULIDAE.

**Prisma** Simroth.

1. *Prisma prismatica* Tapparone Canefri.

TAPP. CANEFRI. Fauna Mal. New Guinea p. 207, Pl. 11, fig. 6—8 (gen. *Veronicella?*).  
COLLINGE. Journ. of Malac. 1902, Vol. IX, p. 129, Pl. 9, fig. 4—6.

New Guinea. Lorentz River. Sept. 21, 1909.

One young specimen has been collected, its length (in alcohol) is only about 11 mill., being much less than a third part of the length recorded by CANEFRI (38 mill.) or COLLINGE (36.5) but the narrow footsole is in accordance with the figures of the latter author, The sides of the body are more convex than in his fig. 6 and I can not detect any traces of black spots on the notum; as to the latter point, I may observe, that CANEFRI in his description, mentions: „inferne pallido, *immaculato*”; the more convex sides may be caused by contraction in alcohol.

Suborder Gehydrophila.

Fam. AURICULIDAE.

**Pythia** Link.

1. *Pythia chrysostoma* Tapparone Canefri.

TAPP. CANEFRI. Fauna Mal. New Guinea p. 237, Pl. 1, fig. 25—27.

New Guinea. Merauke. Many specimens without date (Dr. KOCH leg.) one Nov. 13, 1907;  
Lorentz River, Sept. 2, 1909.

The majority of the specimens collected by Dr. KOCH has a more acute spire than in the figure of CANEFRI (l. c.) but some of them are equally blunt. The yellow colour of the aperture is in some specimens less intensive, (not only on account of youth) in a few even wanting; under the lens I see often some spiral striae, but this seems to be of little importance, otherwise the specimens agree as well as may be desired, with the description and figure of the author.

2. *Pythia borneensis* A. Adams.

A. ADAMS. Proc. Zool. Soc. Lond. 1850, p. 251.

REEVE. Conch. Ic., Scarabus, fig. 11.

ISSEL. Molluschi Borneensi, p. 60.

V. MARTENS. Süss- u. Brackw. Moll. Ind. Arch. p. 140.

Borneo. Pontianak, sago-swamp. July 8, 1909.

The specimens are not adult, but recognizable by the sculpture and banded colour-pattern, though both characters are not very conspicuous, partly by the action of formalin.

3. *Pythia* sp.

New Guinea. Lorentz River, Sept. 5—12, 1909.

The specimen from the above locality is too young for identification.

**Cassidula** Férussac.1. *Cassidula angulifera* Petit.

PETIT. Revue Zool. 1841, p. 101.

KÜSTER. Martini-Chemn. Conch. Cab. Ed. II, Auriculacea, p. 45, Pl. 7, fig. 1, 2.

TAPP. CANEFRI. Fauna Mal. New Guinea, p. 224.

New Guinea. Merauke 1903, Nov. 15, 1907.

Many specimens have been collected in 1903 by Dr. KOCH, one young one in 1907.

**Auricula** Lamarck.1. *Auricula midae* Linné.

LINNÉ Syst. Nat. Ed. X, p. 728.

RUMPH. Amb. Rariteitkamer, p. 107 and 120, Pl. 33, fig. H. H.

KÜSTER. Martini-Chemn. Conch. Cab. Ed. II, Auriculacea, p. 12, 68. Pl. A, fig. 1, Pl. 2, fig. 1—3

REEVE Conch. Ic., Vol. XX, Auricula, fig. 1.

TAPP. CANEFRI. Fauna Mal. New Guinea, p. 215.

V. MARTENS. Süß- u. Brackw.-Moll. Ind. Arch. p. 150.

New Guinea. Oostbaai, May 1907.

2. *Auricula judae* Linné.

LINNÉ. Syst. Nat. Ed. X, p. 728.

KÜSTER. Martini-Chemn. Conch. Cab. Ed. II, Auriculacea, p. 15, Pl. 3, fig. 1, 2.

REEVE. Conch. Ic. Vol. XX, Auricula, fig. 16.

TAPP. CANEFRI. Fauna Mal. New Guinea, p. 217.

V. MARTENS. Süß- u. Brackw.-Moll. Ind. Arch. p. 154, Pl. 8, fig. 6—11.

New Guinea. Merauke 1907, Dr. KOCH leg. On label 1907, I think this must be 1903 or 1904.

The specimens are rather small, with short spire.

**Melampus** Montfort.1. *Melampus singaporensis* Pfeiffer.

PFEIFFER. Malak. Blätter, 1855, p. 8.

„ Novit. Conch. Vol. I, p. 16, Pl. 12, fig. 15, 16.

V. MARTENS. Süß- u. Brackw.-Moll. Ind. Arch. p. 165, Pl. 8, fig. 5, 23.

New Guinea. Merauke 1904, Dr. KOCH leg.

The specimen is somewhat worn and consequently the identification rather doubtful, but it agrees in most respects with the description, and traces of a spiral sculpture remain visible, especially near the base of shell.

## Suborder Hygrophila.

## Fam. LIMNAEIDAE.

**Isidora** Ehrenberg.1. *Isidora moluccensis* Lesson.

LESSON. Voyage Coquille. Zool. Vol. II, p. 332.

TAPP. CANEFRI. Fauna Mal. New Guinea, p. 245.

New Guinea. Sabang, Pandanus-marsh, July 15, 1907.

I owe the identification of this specimen, which is not quite intact, to the kindness of Mr. DAUTZENBERG; as LESSON has not figured his species, this may account for the very different views of subsequent authors.

## Order PROSOBRANCHIA.

## Suborder Pectinibranchia.

## Fam. MELANIIDAE.

**Melania** Lamarck.1. *Melania (Stenomelania) punctata* Lamarck.

LAMARCK. An. s. vert., Ed. II, Vol. VIII, p. 430.

BROT. Martini-Chemn. Conch. Cab., Ed. II, Melania, p. 168, Pl. 20, fig. 4.

v. MARTENS. Süß- u. Brackw.-Moll., p. 49, Pl. 3, fig. 14, 15, (laevigata).

P. &amp; F. SARASIN. Süßw.-Moll. von Celebes, p. 41, Pl. 4, fig. 45, Pl. 5, fig. 77, Pl. 8, fig. 108.

Timor. Koinini River, Aug. 21, 1909.

BROT has (l. c. p. 172) made the suggestion, that *M. laevigata* Lam. should be merely a variety of *M. punctata*, P. & F. SARASIN are of the same opinion. The much incrustated specimens are quite identical with those I enumerated from Timor and which BROT had named for me as doubtless *punctata*. (Notes Leyden Museum, Vol. XIV, p. 155), v. MARTENS (l. c. p. 50) says this is probably his *laevigata* Lam. I think I must follow the opinion of BROT, the brilliant worker in the genus.

2. *Melania (Stenomelania) moesta* Hinds.

HINDS. Ann. Mag. Nat. Hist., XIV, 1844, p. 9.

BROT. Martini-Chemn. Conch. Cab., Ed. II, Melania, p. 180, Pl. 21, fig. 6.

TAPP. CANEFRI. Fauna Mal. New Guinea, p. 27.

New Guinea. Sabang, Pandanus-marsh, July 15, 1907.

The specimens agree sufficiently with such ones formerly named by BROT.

3. *Melania (Stenomelania) sobria* Lea, var. *cochlidium* Lea.

LEA. Proc. Zool. Soc. Lond. 1850, p. 183 (cochlidium).

BROT. Martini-Chemn. Conch. Cab., Ed. II, Melania, p. 179, Pl. 21, fig. 5a.

TAPP. CANEFRI. Fauna Mal. New Guinea, p. 33.

New Guinea. Alkmaar, Oct. 6, 1909.

Two very bad specimens agree sufficiently with those in better state of preservation.

4. *Melania (Stenomelania) lorentzi* n. sp. Pl. V, fig. 5.

Shell subulately turreted, rather strong, colour under a thick, black crust, pale greenish-olive, without any markings (as far as I can see by scratching off the crust). Spire in most specimens but slightly eroded, remaining whorls 7—9 (may be more or less in some specimens), scarcely convex, separated by a distinct suture. Sculpture consisting on the upper whorls, which have an infrasutural groove, of a few, about 6 lirae and more or less numerous ribs, which are very spacious on the lower whorls, where they have the character of varices; last four whorls nearly smooth, only with very fine growth-striae and one or two spirals above the suture, last whorl elongated, with a few spirals at the base. Aperture elongate, narrow above, but in quite developed specimens not acute above, but with a sinus if seen in front, rounded but slightly compressed at the base, peristome thin, with a sinus above, roundedly protracted below, if seen from the side; columella rather straight, body-whorl with a conspicuous layer of enamel.

Alt. nearly 33, lat.  $10\frac{1}{4}$ ; apert. alt.  $11\frac{1}{3}$ , lat. 4 mill.

New Guinea, creek near Bivak Island, May 11, 1907; Lorentz River, May 7—8, 1907; Sept. 3—5, 1909.

Most specimens resemble *M. papuensis* Q. & G., as figured by BROU (Martini-Chemn., Ed. II, Melania, Pl. 21, fig. 10), but I can find no trace of the colourmarkings, on which BROU lays much stress, that species has no ribs on upper whorls, the aperture is, according to description, very different, even if one considers that in the majority of the specimens of the new species, from the river, its upper corner is nearly acute, without distinct sinus. It resembles also in part *M. clavus* Lam. (BROU, l. c. fig. 17a) but in that species the peristome is straight.

The specimens differ more or less in development of sculpture of upper whorls and at the base, also in the shape of aperture, as mentioned above, but after comparing the numerous specimens, I think they belong without doubt to one and the same species.

5. *Melania (Melanoides) alkmaarensis* n. sp. Pl. V, fig. 6.

Shell turreted, rather strong, shining, brownish-olive, with brown spots, especially below the sutures, and some more scattered spots and flames on the rest of whorls, (covered with a ferruginous crust), spire nearly entire; whorls 10, moderately convex, separated by a slightly margined and especially in the lower whorls, deep and slightly canaliculate suture. Sculpture consisting on the upper whorls of spirals, crossed by nearly equal, riblike striae, which in the lower whorls, where the striae have the character of ribs, occupy only the lower part of whorls, 4 in number and form flat, spiral spaces, separated by impressed striae; the upper part of these whorls is rather smooth, with only a few more or less obscure spiral lines; last whorl below periphery, with about 15 spirals, moreover many parts of the shell are wrinkled. Aperture oval, its upper corner acute, peristome thin, its lower part protracted, base narrowly rounded, columella slightly curved, interior of aperture bluish-white.

Alt. 37, lat. 12; apert. alt. 12, lat. 6 mill.

New Guinea. Alkmaar, July—Aug. 1907.

Allied to *M. singularis* Tapp. Canefri, but differing by sculpture, that species (Fauna



Mal. N. Guinea, p. 34, Pl. I, fig. 14, 15) being spirally striated all over, by its colour markings, *M. singularis* being not spotted, the columellar side is much straighter in the new species. It is also allied to *M. indefinita* Lea, but the sutures are less canaliculate, the columellar margin is straighter, and that species is not spotted. It is rather hazardous to describe a new species in this group, on only one specimen, but it proved to be impossible, to unite it to any described species.

6. *Melania (Melanoides) similis* n. sp. Pl. V, fig. 7.

Shell turreted, rather thin, light olive with brown flames, spire nearly entire; whorls from 7—9, moderately convex, last one slightly flattened in the median part, separated by a distinct but shallow suture. Sculpture consisting on the upper whorls, of spiral lirae, crossed by fine growth-striae, which produce a fine, cancellated appearance, on the last 3 whorls, these striae become inconspicuous and the sculpture consists of spiral striae, which are faint on the upper part, very conspicuous towards the base of each whorl and occupy the median part of last whorl, which is smooth at its base. Aperture oval, not very acute above, with a rounded base and slightly curved columellar margin; peristome sharp, slightly protracted below.

Alt. 20, lat. 7; apert. alt. 7, lat. nearly 4 mill. (lower part of aperture slightly damaged).

New Guinea. Alkmaar, Oct. 6, 1909.

Perhaps the nearest allied species is *M. flyensis* Tapp. Can. (Fauna Mal. N. Guinea p. 41, Pl. I, fig. 19), but if the figure be not too incorrect, immediately distinguishable by the much more constricted sutures, especially of the upper whorls and by the particulars of sculpture.

7. *Melania (Melanoides) striatissima* n. sp. Pl. V, fig. 8.

Shell acuminate-turreted, rather thin, dark brown, if seen by transparent light within the aperture, with a few brown spots below the suture, some flames and spots near the base and a basal band, all oft he same colour; spire nearly entire, whorls 10, rather convex; the uppermost whorls with a constriction below the suture, fading on lower whorls; suture deep, narrowly canaliculate. Sculpture consisting on the upper whorls of narrow spirals, on about 2 or 3 upper whorls crossed by oblique ribs, occupying nearly the whole breadth of about 3 subsequent whorls; many of these ribs are only visible on the upper part of next whorls and disappear towards the last one; on the lower whorls the spirals are very broad and separated by shallow grooves, the lirae consist each of a number of very fine spirals (until 7) especially conspicuous where the velvety epidermis is present. Aperture oval, moderately acute above, with a slightly effused base and curved columellar margin, peristome slightly protracted below.

Alt. 21, lat. 8, apert. alt.  $7\frac{1}{4}$ , lat.  $4\frac{1}{2}$  mill.

New Guinea. Merauke, Nov. 13, 1907.

This species resembles in shape still *M. flyensis* Tapp. Can., but is quite different by its peculiar sculpture; perhaps *M. pellicens* Tapp. Can. (Fauna Mal. N. Guinea, p. 30, Pl. I, fig. 18) has a similar sculpture, though quite different in particulars, it belongs to another group.

8. *Melania (Plotia) scabra* Müller.

MÜLLER. Hist. Verm. p. 136.

BROT. Martini-Chemn. Conch. Cab., Ed. II, *Melania*, p. 266, Pl. 27, fig. 14, 15.

TAPP. CANEFRI. Fauna Mal. New Guinea, p. 48.

New Guinea. Alkmaar, Oct. 6, 1909.

A few dead specimens most probably belong to this species.

9. *Melania (Plotia) acanthica* Lea, var.

LEA. Proc. Zool. Soc. Lond. 1850, p. 194.

BROT. Martini-Chemn. Conch. Cab. Ed. II, *Melania*, p. 278, Pl. 28, fig. 10.

New Guinea. Lorentz River, May, 1907; Alkmaar, Oct. 6, 1909; Bivak Island, Sept. 27;

Oct. 8, 1907.

V. MARTENS (Süss- u. Brackw.-Moll. p. 62), has considered this form to be a variety of *M. scabra*, it is characterized by its ribs, which bear the spines; the specimens resemble fig. 10c of BROT, with short spines, those from the Lorentz River are small, those from Alkmaar on the contrary, very large, the largest specimens reaching a length of 38 mill., in these latter specimens there are no spines on the last whorl, but only blunt knobs, forming a passage to some specimens from Bivak-island, where these knobs are scarcely visible and which would have deserved a varietal name, were it not that they are connected to more typical specimens by intermediate ones, in such specimens the spiral sculpture of the base is scarcely or not at all developed, and if one has in view one of these extremes, one should no doubt be inclined to describe a new species.

## Fam. VIVIPARIDAE.

*Vivipara* Gray.1. *Vivipara laevigata* Bavay.

BAVAY. Nova Guinea, Vol. V, Zool. p. 272, Pl. 14, fig. 4.

New Guinea. Sabang, Pandanus-marsh. July 20, 1907.

One young specimen agrees rather well with the description of BAVAY and with a type-specimen I have seen, it has however some rows of hairs, which are easily rubbed off and which are often seen in young specimens belonging to this genus. A difference of some more importance, is that the whorls are faintly margined below the suture and not only above it, as in the type, but as I have only one specimen to compare, I cannot lay much stress upon this circumstance.

2. *Vivipara* sp.

New Guinea. Sabang, Pandanus-marsh. Juli 15, 1907.

Two still younger specimens from the same locality, are equally hairy, they differ from the preceding species, by their whorls being shouldered. They are too young for description, though I cannot identify them with any known species.

## Fam. CYCLOPHORIDAE.

**Leptopoma** Pfeiffer.1. *Leptopoma vitreum* Lesson.

LESSON. Voy. Coquille, Zool., Vol. II, p. 346, Pl. 13, fig. 6.

PFEIFFER. Mon. Pneumonop. Vol. I, p. 101.

v. MARIENS. Ostas. Landsch. p. 143, Pl. 4, fig. 2.

TAPP. CANEFRI. Fauna Mal. New Guinea, p. 259, Suppl. p. 58.

New Guinea. Merauke. Dr. KOCH leg.

The colour of the only specimen is light corneous, but its shape is quite typical.

2. *Leptopoma gianellii* Tapparone Canefri.

TAPP. CANEFRI. Fauna Mal. New Guinea. Suppl. p. 71, Pl. 2, fig. 10, 11.

New Guinea. Lorentz River, May 16—19, 1907; Sept. 16, 20—22, 25, 1909; Sept. 24, 1912.  
(VERSTEEG leg.)

The specimens mentioned above are typical as far as concerns the first 3 records; the last 2 form links to the next colour variety, by their upper whorls being not spirally banded, but more or less flamed or spotted, with the exception of the rosy top; even a few specimens are quite typical, without any spots; the majority of the specimens seems to belong to var.  $\alpha$  of TAPP. CANEFRI, though he does not mention that the base of shell has always at least one infra-peripheral brown band, this variety came from the following localities:

Digul River, 1904, (Dr. KOCH leg.); Van der Sande River, Sept. 10, 1909; Bivak Island, Sept. 15, 20, 22, 25, 1909; Sabang, June 28, 1907; Resi Ridge, Aug. 30, 1907; Van Weel's Camp, May 29, 1907.

It will be observed from many of the dates, that specimens of the type and var. were collected together, and so the value of the variety is not more than that of our common garden-snails.

3. *Leptopoma melanostoma* Petit.

PETIT. Revue Zool. 1841, p. 308.

PFEIFFER. Martini-Chemn., Conch. Cab. Ed. II, Cyclostomacea, p. 173, Pl. 25, fig. 12—15.

„ Mon. Pneumonop. Vol. I, p. 104.

TAPP. CANEFRI. Fauna Mal. New Guinea, p. 258.

New Guinea. Moaif, 1903.

var.  $\beta$ . Tapp. Canefri, l. c.

SMITH. Proc. Zool. Soc. Lond. 1884, p. 162.

Same locality.

var. *rufolabiata* n. var.

Shell like the type but with an orange-red peristome, (in one specimen very faint).

Same locality.

**Cyclotus** Guilding.1. *Cyclotus guttatus* Pfeiffer.

PFEIFFER. Proc. Zool. Soc. Lond. 1851, p. 251.

„ Martini-Chemn., Conch. Cab., Ed. II, Cyclostomacea, p. 333, Pl. 43, fig. 15, 16.

TAPP. CANEFRI. Fauna Mal. New Guinea, p. 249.

Aru Islands. Fenuabori River. Dec. 5, 1907.

Of the three specimens one is much bleached, 2 are rather young, consequently somewhat doubtful; the operculum is wanting.

**Lagochilus** Blanford.1. *Lagochilus gudei* n. sp. Pl. V, fig. 9.

Shell depressedly turbinata, carinated, umbilicated, whitish, with red-brown zigzag-flammules, forming subquadrate spots below the suture and on many places of the shell, whorls about  $5\frac{1}{2}$ , nuclear ones dark brown, with a whitish top, the whole shell covered with a deciduous, yellowish epidermis, whorls moderately convex, last one descending near the aperture. Sculpture consisting of a rather prominent keel, visible on the post-nuclear whorls, just above the deep suture, the last whorl is uni-lirate below the keel, and the last and part of penultimate whorl, have about 12 spirals, of which there is but one on the upper ones; the whole shell is crossed by conspicuous growth-striae. Aperture subcircular, slightly angular above; peristome double, its outer margin rather thin, moderately reflected, very narrow along the columellar side, interior margin projected, nearly straight, slightly incised in its upper part. Operculum? Umbilicus pervious, moderately wide, slightly covered by the peristome.

Diam. maj. 15, alt.  $11\frac{1}{2}$ ; apert. alt. et lat. 6 mill.

New Guinea. Resi Ridge, Aug. 30, 1907.

Though the specimens are quite destitute of hairs, I have located the species in the genus *Lagochilus*, as the aperture agreed well with that of this genus, the specimens are dead, so no hairs could be expected, I know no species which is nearly allied; *L. papuanus* Smith has a quite different sculpture; in shape it resembles *L. bunguranensis* Smith, but that species is much less depressed and has no keel etc.; in colour it is quite different.

## Fam. CYCLOSTOMIDAE.

**Adelomorpha** Tapparone Canefri.1. *Adelomorpha lorentzi* n. sp. Pl. V, fig. 10.

Shell turbinata, with acute spire, umbilicated, reddish-fulvous, thin. Whorls  $5\frac{1}{2}$  or 6, very convex, especially the last one, which is slightly dilated, rendering the outline concave, separated by a deep suture, slightly descending near the aperture. Sculpture consisting of microscopic, oblique lines of growth, stronger at intervals, crossed by similar spirals on the post-nuclear whorls, last whorl rounded. Aperture subcircular, angular above, peristome thin, straight, columellar margin reflected, near its base with a small auricle, partly covering the narrow umbilicus, margins connected by a thin layer of enamel.



Operculum paucispiral, corneous, externally with a thin layer of lime, that outer surface is concave, whitish, dull; interiorly it is yellowish, smooth and convex.

Alt. 6, lat. 5, apert. alt. about 3, lat.  $2\frac{1}{2}$  mill.

Aru Islands. Fenuabori River, Dec. 5, 1907.

The nearest ally may be *A. brunnea*, which is however much larger, with about the same number of whorls, and that species has no auricle at the columellar margin, as far as I can see from the description. It resembles also *A. tristis* Tapp. Can., which is however smaller and has no spiral sculpture; the auricle agrees. As I was not certain if this genus belongs to the *Realiidae*, I have left it amongst the family in which FISCHER has located this group in his Manuel de Conchyliologie.

2. *Adelomorpha campanulata* n. sp. Pl. VI, fig. 1.

Shell depressedly-turbinate, strong, with a rather short, conical spire, umbilicated, greyish, but colour not easily recognizable, the shell being much eroded, though taken alive, it has a corneous epidermis on a few spots; whorls probably about 5, (the top-whorl broken) moderately convex, separated by a conspicuous but rather shallow suture, considerably descending near the aperture, last whorl dilated and campanulate. Sculpture not conspicuous, perhaps by the erosion, but partly faint growth-striae and spiral ones are visible, last whorl depressedly-rounded, flattened above at its last part. Aperture rounded, but with an acute angle above; peristome thickened, enlarged, but not reflected, columellar margin thick, its base angular and still more thickened, but scarcely auriculiferous, only slightly covering part of the moderately wide umbilicus, margins connected, only touching the body-whorl at the upper angle. Operculum paucispiral, externally much concave, with a rather thick layer of lime, its upper corner, in accordance with the shape of aperture, with an acute angle.

Alt. 9, lat.  $9\frac{1}{2}$ , apert. alt. 5, lat. 4 mill.

New Guinea, Hellwig Mountains, Oct. 13, 1909; from 1000—1360 m.

This species seems to be sufficiently characterized, it agrees in many respects with *A. novae-hiberniae* Quoy and Gaimard f. i. in being campanulate, but not at all in shape, its strength is also remarkable.

### Cyclotropis Tapparone Canefri.

1. *Cyclotropis papuensis* Tapparone Canefri.

TAPP. CANEFRI. Fauna Mal. New Guinea, p. 279, Pl. 10, fig. 22, 23.

New Guinea. Lorentz River, Sept. 5—12, 1909; near Bivak Island, March, 1910.

Varying in colour-pattern, many specimens are typical, other ones have a more reddish tinge, some with regular bands, instead of blotches some bandless, often a supra-carinal brown band is visible.

CANEFRI has located this species amongst the *Assiminiidae*, but the large, pectinate outer uncini and the lacking of basal denticles on the median tooth of the radula, have induced me to locate it near *Adelomorpha*.

## Suborder Scutibranchia.

## RHIPIDIGLOSSA.

## Fam. HELICINIDAE.

**Aphanoconia** Wagner.1. *Aphanoconia leucostomoides* n. sp. Pl. VI, fig. 2.

Shell conical-globose rather thin, shining, yellow. Whorls  $4\frac{1}{2}$ , slightly convex, separated by a distinct but rather shallow suture, not descending in front. Spire conoidal, apex blunt, papillary. Sculpture of the apex consisting of spiral rows of very small but conspicuous pits, only visible under a strong lens, followed by about  $\frac{1}{3}$  of a whorl with 2 faint spiral lirae; subsequent whorls with very fine, oblique, radial striae, on the last whorl traces of about 8 spirals having an epidermical appearance, they are rather irregular and much interrupted (probably rubbed off) except behind the peristome; at last in some parts of the shell, microscopic, very oblique scratches are visible; last whorl rounded, slightly more depressed above. Aperture a little oblique, subtriangular; columellar margin concave below, ending in a point, peristome expanded, whitish interiorly. Callus slightly granulose, rather thin, but conspicuously circumscribed in its basal half.

Operculum yellowish-white, agreeing in shape and structure with the description of WAGNER in the second edition of MARTINI-CHEMNITZ's „Conchylien Cabinet”.

Alt. nearly 6, diam. maj, incl. perist. 6. Apert. alt.  $3\frac{1}{4}$ , lat.  $2\frac{3}{4}$  mill.

New Guinea. Lorentz River, Sept. 22, 1909.

This species belongs, according to its characters, to the genus *Aphanoconia*. Amongst the species from New-Guinea, *Helicina leucostoma* Tapp. Can. (Fauna mal. N. Guinea, p. 277, fig. h, Pl. 9, fig. 10, 11, seems to be nearly allied, but there is no trace in the new species of a white-bordered suture, the sculpture of upper apical whorls, may have been overlooked by T. C., but above all the sculpture of callus is different; TAPP. CAN. calls it *crebre-impresso-punctatum*, in the new species it is granulose.

2. *Aphanoconia rufo-unistrigata* n. sp. Pl. VI, fig. 3.

Shell conical, thin, shining, yellow, with a rufous, squarish-oblong spot at the upper part of last whorl, just behind the peristome. Whorls about 4, scarcely convex, separated by a distinct, shallow, white-bordered suture, slightly descending in front. Apex blunt, papillary, with spiral rows of small pits, as in the former species. Subsequent whorls with slightly obscure, radial striae and the oblique scratches, no spirals visible (perhaps rubbed off), last whorl with rounded periphery, obliquely depressed above, much so below. Aperture slightly oblique, subtriangular, upper margin straight, rufous, outer and basal margins expanded, whitish interiorly, columellar margin straight, angular at the junction with basal margin. Callus rugose, thin, whitish, impressedly circumscribed just near the end.

Operculum in another eroded specimen whitish (bleached?), not sufficiently visible, with the characteristic groove.

Alt. nearly 4, diam. maj.  $4\frac{1}{2}$ , apert. alt. 2, lat.  $1\frac{3}{4}$  mill.

New Guinea. Resi Ridge, Aug. 30, 1907.

This species seems to be allied to the preceding one, it is considerably smaller, more depressed, without trace of spirals on the part subsequent to the pitted apex and remarkable by the rufous spot. I should scarcely have described it, no specimen being quite complete, were it not for the peculiar locality.

Fam. NERITIDAE.

**Neritina** Lamarck.

1. *Neritina (Neritaea Auriculatae) transversecostata* n. sp. Pl. VI, fig. 4.

Shell very convex, strongly compressed at the posterior part, yellowish-brown, with black lines, which form more or less conspicuous meshes and in a few cases leave unmarked zones; sculpture consisting of very fine growth-striae and similar spiral striae, which under a strong lens have the appearance of spiral rows of granules, moreover the shell is transversely costate, no two specimens seem to be quite the same, in one specimen the ribs are nearly lacking, in the other extreme the ribs amount to more than 20, these ribs may be lacking on some parts or be regularly spaced. Aperture with columellar area elongate, rounded anteriorly, upper and basal margins slightly convex, upper auricle nearly rectangular with rounded angle, lower one forming a blunt angle, columellar area greyish-white, dull, with a few irregular, shallow grooves, its margin slightly concave, often with very inconspicuous denticles, its posterior margin slightly convex, with the small apex surpassing it and in most specimens much eroded. Operculum whitish, often with a more or less extensive grey spot towards the columellar side and sometimes a small grey spot near the nucleus, a large, faint reddish border to the right side; left half of outer surface with small granules, right half with curved, rib-like striae, inner surface smooth and shining, similarly coloured, but more yellowish; claviform apophysis whitish, with a shallow groove near the end, apical apophysis depressed, yellow.

Alt. 8, diam. maj.  $13\frac{1}{2}$ ; apert. lat. 11, of which  $5\frac{1}{3}$  for the area.

New Guinea. Lorentz River, May and May 11, 1907; Sept. 5—12 1909. Creek near Bivak Island, May 11, 1907.

This species differs in shape from the majority of known species, but especially by the transverse ribs, which I have not found in any description of allied species, and which, though very variable in number, are very conspicuous and so at once distinguish it, for though in one specimen they are scarcely traceable, this one may be old, with only one or two ribs, which are perhaps rubbed off.

2. *Neritina (Neritaea Mitrulae) crepidularia* Lamarck.

LAMARCK. An. s. vert. Ed. II. Vol. VIII, p. 572.

v. MARTENS. Martini-Chemn. Conch. Cab. Ed. II, Neritina, p. 37, Pl. 7, fig. 1—14.

TAPP. CANEFRI. Fauna Mal. New Guinea, p. 63.

TRYON. Man. of Conch. Vol. X, p. 77, Pl. 23, fig. 95—100.

v. MARTENS. Süß- u. Brackw.-Mollusken, p. 218.

New Guinea. Merauke, 1906. (Dr. KOCH leg.)

The numerous specimens are dead shells, much bleached, with the columellar area consequently white or yellowish-grey, the colour-pattern is very variable, some specimens with



upwards to 3 white zones, but on account of the bad condition, it seems not desirable to distinguish varieties.

3. *Neritina (Neritaea Pictae) ziczac* Lamarck.

LAMARCK. An. s. vert. Ed. II, Vol. VIII, p. 570. (zigzag).

v. MARTENS. Martini-Chemn. Conch. Cab., Ed. II, Neritina, p. 101, p. 280, Pl. 10, fig. 21 (coromandeliana).

TAPP. CANEFRI. Fauna Mal. New Guinea, p. 69. (ziczac Sow. non Lam.).

TRYON. Man. of Conch. Vol. X, p. 36, Pl. 10, fig. 88, (ziczac Sow.).

v. MARTENS. Süss- u. Brackw.-Mollusken, p. 79.

New Guinea. Lorentz River, Sept. 5—12, 1909.

The specimen has in its upper whorls and a large part of last whorl, very narrow black lines and a basal zone of much broader ones, agreeing rather well with the quoted figures. Authors have much discussed the question if this species should be named *ziczac* Lam. or Sow. or *coromandeliana* Sow., or even *ramosa* Meuschen, till v. Martens (Süss- u. Brackw.-Moll. p. 79) has declared to be convinced by the inspection of the type of LAMARCK, that this species is the true *ziczac* of LAMARCK.

4. *Neritina (Neritodryas) simplex* n. sp. Pl. VI, fig. 5.

Shell globosely-turbinata, (often more or less eroded), whitish, with a yellowish epidermis, slightly orange-yellow towards the top; when it is not eroded, with very fine growth-lines, irregularly intermingled with coarser ones and with a few short, spiral grooves. Whorls about 3, the apical one slightly projected, the next more swollen, then much swollen in the front view above the aperture, separated by a very deep and much descending suture. Aperture moderately oblique, semi-elliptical, its basal margin regularly rounded, continuous on the body-whorl as a rim, ending about halfway the columellar area, which is narrow, white, with a slightly concave margin, with some partly very inconspicuous teeth, its posterior margin is nearly straight, with a marked border, in the lower half of the posterior areal margin, a narrow space is circumscribed by the rim, the area is rather dull, with very fine wrinkles.

Operculum exteriorly light orange, with small granules, only visible under a very strong lens, interiorly smooth, except along the columellar margin, where a dull zone with a few grooves, runs nearly parallel with the waved margin, claviform apophysis with many grooves, its apical part multi-digitate, hollow below, the apical apophysis strong, connected to the claviform one, orange, elegantly curved.

Alt. 13, diam. maj. 12, apert. alt. (diagonally) 10, lat.  $7\frac{1}{2}$  mill., of which about 2 for the area.

New Guinea. Alkmaar, Aug. 9, 1907.

This species, which, by its operculum, evidently belongs to *Neritodryas*, is quite different by its colour, which is always the same in the numerous specimens, in size it comes nearest to *N. apiata* Recl., but in shape it is considerably different by its much swollen whorls. If *apiata* be only a variety of *dubia*, as TRYON (Man. of Conch., Vol. X, p. 44) suggests, the operculum should give another difference, as according to the description of v. MARTENS in his Monograph, p. 138, the operculum of *N. dubia* is totally different; unfortunately v. MARTENS (l. c. p. 282) says that the operculum of *N. apiata* refers it to *Neritodryas*, but gives no description of it.



5. *Neritina (Clithon) brevispina* Lamarck.

LAMARCK. An. s. vert. Ed. II, Vol. VIII, p. 572.

v. MARTENS. Martini-Chemn. Conch. Cab. Ed. II, Neritina, p. 156, Pl. 17, fig. 1—4, 9.

TAPP. CANEFRI. Fauna Mal. New Guinea, p. 73.

TRYON. Man. of Conch. Vol. X, p. 65, Pl. 23, fig. 16—18; Pl. 24, fig. 19, 20.

v. MARTENS. Süß- u. Brackw.-Mollusken, p. 79.

New Guinea. Etna Bay, 1904. (Dr. KOCH leg.) Timor. Koinini River near Kupang, Aug. 21, 1909.

The specimens from Etna Bay have very short spines, in one young specimen they are lacking. As to the specimens from Timor, they belong to the same form, thickly covered by the chalky crust, which v. MARTENS (Mon. *Neritina*, p. 158) mentions, it is impossible without removing this crust, which is no easy task, to state if the specimens are shortly spined or not at all.

6. *Neritina (Clithon) wallacei* Dohrn.

DOHRN. Proc. Zool. Soc. London. 1861, p. 206, Pl. 26, fig. 1.

v. MARTENS. Martini-Chemn., Ed. II, Neritina, p. 258 (Section Pictae).

SCHEPMAN. Tijdschr. Ned. Dierk. Ver. Vol. VI, 1882, p. 20, Pl. 2, fig. 4.

TRYON. Man. of Conch. Vol. X, p. 40, Pl. 12, fig. 48.

Aru Islands. Bendjina River, Dec. 4, 1907.

The majority of specimens belongs to the typical form without spines, in a large number of colour-varieties, some being darker than those mentioned by me in 1882; TRYON (l. c.) seems not to have known my paper, where I have shown that the species belongs to *Clithon*, as he refers it to his typical *Neritinae*; the lot collected by Dr. LORENTZ, makes my view, if necessary, still more obvious, as it contains a spinous variety:

var. *spinosa* n. var. Pl. VI, fig. 6.

Shell with from 1 to 3 short spines, colour about the same as in the type; mixed with the typical form.

A few typical specimens have been occupied by a *Pagurus*, giving evidence that the species seems to inhabit brackish water, exclusively or at least in part.

## Class PELECYPODA.

## Order EULAMELLIBRANCHIA.

## Fam. CYRENIDAE.

*Cyrena* Lamarck.1. *Cyrena viridescens* Tapparone Canefri.

TAPP. CANEFRI. Fauna Mal. New Guinea, p. 285, Pl. 10, fig. 24.

New Guinea. Mimika, Febr. 1910.

Several fine specimens have been collected. The majority has the rugosities of the posterior part of the shell more developed than in the quoted figure, but much less so, than in *C. divaricata* Desh., as figured by SOWERBY in REEVE'S Monograph, and only on the lower

part of the posterior margin, not on the posterior part of upper margin until the umbones, also the colour is different, being greenish instead of blackish-brown, as it should be according to DESHAYES (Proc. Zool. Soc. London, 1854, p. 17), moreover the sculpture is more regular, than it should be in *divaricata*. SOWERBY has located that species in the genus *Batissa*, which is obviously a mistake, as may be seen by the description of the lateral teeth by DESHAYES; they are short and not crenulate. The shells vary in size, the largest specimen has a length of 96, a height of 91 and a diameter of 58 mill., they vary slightly in shape, some specimens being a little more elongated. I think these differences are not sufficient to name a new variety.

2. *Cyrena coaxans* Gmelin.

GMELIN. Syst. Nat. Ed. XIII, p. 3278.

v. MARTENS. Süss- u. Brackw.-Mollusken, p. 98, Pl. 6, fig. 1—3.

New Guinea. Mimika, Febr. 1910.

Amongst the specimens of *C. viridescens* I find one specimen which is different and which after comparison, agrees in so many particulars with the species described and figured by v. MARTENS (l. c.) as *coaxans*, that I think it ought to be united with that form; it is slightly higher in proportion to its length, the height being 83, the length 90 mill., but if one compares the measurements given by v. MARTENS (l. c. p. 99), his specimens are also variable in this respect, moreover the umbones are not eroded, only the epidermis of the umbones is rubbed off, the posterior margin is still straighter than in the figure of v. MARTENS. This species has, as far as I am aware, not yet been recorded from New Guinea, but I cannot identify it with any of the known species, enumerated by CANEFRI or other authors on its molluscan fauna, and the differences with *coaxans* are of little importance.

3. *Cyrena kochi* n. sp. Pl. VI, fig. 7.

Shell ovate, moderately inaequilateral, with a brown epidermis, which near the ventral margin is lamellose, surface with irregular, partly rather crowded striae and a few impressed grooves, interior light bluish-white; umbones rather prominent, anterior upper margin rather straight at first, then more convex, posterior one convex, ventral margin moderately convex, straighter towards the middle part, strongly rounded at the ends and running with rounded outlines, without prominent angles or truncation into the upper margins. Lunule oval, marked by a shallow line. Right valve with three cardinal teeth, the anterior one short, compressed, triangular, the second and third ones elongate, oblique, moderately thick, each with a groove at the top, the posterior one by much the longest, laterals two at each side, of the anterior ones the interior tooth, if seen from above, forms a long, curved wall, with a slightly elevated point in the side-view, exterior one short, oval, less elevated; posterior laterals rather distant from the cardinals, interior one straight, little elevated, with a blunt point, exterior one elongated, much shorter. Left valve with three cardinals, the anterior two short, compressed, oblique, with a groove at the top; anterior lateral short, thick, with a rounded top, connected to the first cardinal by a thick ridge, posterior lateral elongate, compressed, bluntly triangular in the side-view. Muscular impressions conspicuous, shallow, pallial line conspicuous, margin of shell thickened. Ligament but slightly prominent.

Long. 50, alt.  $40\frac{1}{2}$  (umbones slightly eroded) diam.  $27\frac{1}{2}$  mill.

N. Guinea. Merauke, 1904. (Dr. Koch leg.)

I cannot identify this species with any of those known from New Guinea. Dr. HAAS who has seen the only specimen, found some resemblance with *C. ingens* Dautz. (Journ. Conch. 1900, p. 105, Pl. 5) from the New Hebrids, but besides the difference of locality, that gigantic species has a length of 150 mill., while the N. Guinean species by its thick margin, has not the appearance of being young, moreover there are differences enough in the hinge etc. to reject any idea of identification.

4. *Cyrena subtriangula* n. sp. Pl. VII, fig. 1.

Shell thick, subtriangular, very inaequilateral, covered with a dark-brown epidermis, which is however greenish near the ventral margin, so I am not certain that the dark colour is the natural one, rather smooth, but lamellose near the margins, surface with rather crowded, irregular striae; interior white; umbones slightly prominent, not much eroded; anterior upper margin nearly straight, rather short, posterior one long, convex, (damaged), ventral margin not very convex, running with rounded angles in the upper ones. Lunular part nearly flat, I can find no marked lunule. Right valve with three cardinal teeth, anterior one nearly perpendicular, not grooved, the other two more oblique, grooved. Of anterior laterals, the interior one thick, curved, with a low point, exterior one small; of posterior laterals the interior elongate, thick, nearly straight, without real point, exterior one not very prominent. Left valve with three cardinals, the two anterior ones grooved the third very oblique, rather long, sharp, anterior lateral short, thick, high, posterior one elongate, thick, rather prominent. Muscular impressions conspicuous, shallow; pallial line strong, margin of shell thickened. Ligament slightly prominent.

Long. 52, alt. 45, diam. 28 mill.

New Guinea. Lorentz River. Sept. 2, 1909.

The nearest allied species I can find is *C. buschi* Phil. (Abb. Vol. III, p. 78, *Cyrena*, Pl. 2, fig. 2), but the umbones of the new species are less prominent, it is considerably more inaequilateral, the anterior margin being more rapidly descending, the shell is consequently relatively shorter and more triangular.

### Batissa Gray.

1: *Batissa albertisii* Tapparone Canefri, var. *crassior* n. var. Pl. VI, fig. 8.

Shell thick, outline variable.

New Guinea. Bivak Island, Jan., Febr., 1910; Kampong above Dumas River, Jan., 1910; Lorentz River, May 5, 19, 22, 1907; Sept. 3, 5—12, 8, 1909; Van Weel's Camp, May 27, 1907.

A large number of shells has been collected, the majority from the Lorentz River, with the label Sept. 5—12, 1909; after repeated comparison I think the only way is to bring them under *B. albertisii* Tapp. Canefri (Fauna Mal. N. Guinea, p. 289, Pl. 11, fig. 1) as var. *crassior*, the character „tenuiculis” in the original description being only applicable to the small, young specimens; they are variable in many respects, but nearly all are without the soft parts and



many of them are only loose valves, so they may have been drifted together from several parts of the river, which may account for the diversity of forms found in the same lot, without the possibility to separate them in well-characterized varieties. The posterior or the anterior part is often more truncated, than in the original figure, the shell consequently shorter, the ventral margin is in many instances straighter, rarely as much rounded as in the type; some shells are more swollen or flatter than usual, the hinge is variable in strength and length of the cardinal teeth, partly on account of the erosion of the umbones; the colour of the interior differs from nearly totally white to nearly quite violaceous, especially in very young specimens, with many intermediate ones; old shells are mainly darker externally than young ones, as is usually the case.

One of the allied species is *B. humerosa* Desh. (Journ. de Conch. Vol. IX, 1861, p. 38, Pl. 2, fig. 1), but that shell is considerably more elongate, its ventral margin straighter, its posterior part more truncated below, however a few old valves come very near to it, though always shorter. A comparison with the types of these two species and of *B. corbuloides* Desh. should be very useful, to clear up their affinities. If one had to compare only a few selected specimens of the forms under consideration, it would not be difficult to erect several well characterized species.

#### Fam. UNIONIDAE.

##### *Unio* Retzius.

###### 1. *Unio* sp.?

New Guinea. Sabang Camp, Jan. 20—30, 1907.

Only one right valve has been collected, which I thought might belong to *U. beauforti* Bavay, but there are too many differences with co-types I got for comparison from the Zoological Museum at Amsterdam, collected at the Sentani-lake and the Jamur-lake, that, though those specimens vary considerably, I could not identify it. As I could not decide from this single valve, to which of the many genera, in which the genus *Unio* has been split, it may belong, I have used the old name *Unio*, as BAVAY has done (Nova Guinea, Vol. V, Zool., p. 291).

##### *Virgus* Simpson.

###### 1. *Virgus lorentzi* n. sp. Pl. VII, fig. 2.

Shell elongate, tongue-shaped, compressed, rather strong, dark brown. Anterior upper margin nearly straight, but slightly convex, running with a rounded angle into the moderately rounded anterior margin, which runs imperceptibly into the ventral margin, this latter is slightly concave near the middle, then slightly decurved and with a convex outline, running roundedly into the posterior part of shell; posterior upper margin slightly convex at first, then with a blunt angle more than half way the length between umbones and posterior extremity; behind this angle the margin is conspicuously but not strongly concave. Umbones low, eroded, slightly pointed, placed at about  $\frac{1}{6}$  of the total length of shell, behind the umbones with traces of short radiating plicae, more conspicuous on the right valve. Surface practically smooth, but the slightly compressed, elongately triangular area is limited by a conspicuous ridge, moreover



the shell has a few very faint radiating ridges, especially traceable towards the posterior extremity; region of the lunula equally compressed. Ligament short, conspicuous, but not strong. Cardinal teeth: one deeply grooved in the right valve, strong, thick, anteriorly very strongly crenate, nearly consisting of lamellae, left valve with two united teeth, anterior one deeply grooved, whole surface strongly crenate, nearly digitate. Lamellae strong, low near the umbones, higher posteriorly, one in the right valve, its crest rather faintly crenate behind, two in the left valve, the exterior one by much the lowest, both very faintly crenate. Anterior muscle-scars very deep, especially in the right valve, subquadrate, a small very deep, ovate one below posterior end of teeth and another more conspicuous one in the right valve below it, more or less confluent with the large anterior muscle-scar, posterior scars elongate, much shallower but conspicuous, with a deep oval scar above it, at the end of the lamellae; mantle-scar conspicuous. Nacre bluish-white, near the posterior part iridescent.

Long 70; alt. (at the umbones) 24, (at the angle) nearly 31, diam. 17 mill.

New Guinea. Alkmaar, Oct. 6, 1909.

This shell is according to Dr. HAAS, who has examined it, allied to *V. beccarianus* T. Can. (Fauna Mal. N. Guinea, p. 291, Pl. 11, fig. 2), which is however quite different, not only by its narrow shape, but also by its sculpture, though this character seems to be variable; but that species has another outline and is much less compressed posteriorly; it appears to be nearer allied to my *Unio* (now *Virgus*) *misoolensis*, but is relatively much more elongate and the beak or posterior part is much more rounded, besides there are other differences in outline. I have the pleasure of naming it after its discoverer.

## B. Marine Mollusca.

Amongst the Mollusca collected by Dr. LORENTZ, are a few marine and brackwater species, a larger number has been collected by Dr. KOCH from Merauke and other localities; as the majority belongs to well known species, I have enlisted them, adding only a few remarks and the description of a few new forms. The generic and specific names, may not always be up to date, as the opinion of recent authors disagrees still too much; so this list is more a simple enumeration than a perfect systematical review.

### Suborder Prosobranchia.

#### RHACHIGLOSSA.

#### Fam. VOLUTIDAE.

#### **Cymbiola** Swainson.

##### 1. *Cymbiola (Aulica) flavicans* Gmelin?

GMELIN. Syst. Nat. Ed. XIII, p. 3464.

New Guinea. Merauke, 1904. (Dr. KOCH leg.)

A quite worn shell, comes nearest to *Voluta flavicans* Gmel., only the uppermost of the columellar plicae is slightly thinner and more oblique than in my specimens, so I have

identified it with some doubt, the more so as the only specimen is young. Mr. HEDLEY (Proc. Lin. Soc. N. S. W. 1914, Vol. XXXIX, p. 724) locates it in the subgenus *Aulica*.

### Melo Humphrey.

#### 1. *Melo* sp.

West Coast of New Guinea, 1904. (Dr. KOCH leg.)

The soft parts are complete, though large part of the foot has been cut off and preserved separately. Unfortunately only a small part of the shell has been preserved, consisting of the columellar side with 3 strong folds and a short, much weaker one, above them; moreover a small part of the interior of last whorl, marbled with yellowish and light brown and two rows of darker stains, of which the upper one consists of squarish, the lower of elongate spots is present. As the spire is wanting, it is impossible to name the species, the more so as the different figures, have caused much controversy amongst authors.

### Fam. TURBINELLIDAE.

### Melongena Schumacher.

#### 1. *Melongena pugilina* Born.

BORN. Mus. Caes. Vindob. p. 314.

KIENER. Coq. Viv. Vol. V, Pyrula, p. 6, Pl. 5, fig. 1 (vesperilio Lam.).

New Guinea. Merauke, 1904. (Dr. KOCH leg.)

Though the first figure quoted by BORN (l. c.) represents *M. bucephala* Lam., his description and other quoted figures, as far as I could compare them, belong to *M. pugilina*, so I have accepted this name.

#### 2. *Melongena cochlidium* Linné.

LINNÉ. Syst. Nat. Ed. X, p. 753.

KIENER. Coq. Viv. Vol. V, Fusus, p. 55, Pl. 30, fig. 1.

TRYON. Man. of Conch. Vol. III, p. 110, Pl. 43, fig. 227.

New Guinea. Merauke, 1904. (Dr. KOCH leg.)

The specimens agree better with the quoted figure of TRYON, which is a copy of that in the Voyage de l'Astrobabe, Pl. 22, fig. 37, than with other ones I have seen; the depression of the upper part of whorls is narrower and less flattened than usual, this may partly be due to smaller size (youth?) for in the upper whorls of my specimens the same character may be observed, though not so pronounced.

### Fam. NASSIDAE.

### Nassa Lamarck.

#### 1. *Nassa (Zeuxis) unicolor* Kiener. Fig. 1.

KIENER. Coq. Viv. Vol. VIII, Buccinum, p. 60, Pl. 19, fig. 69.

New Guinea. Merauke, 1904. (Dr. KOCH leg.)

A few very fine specimens agreeing with KIENER's figure and some smaller ones have

## EXPLANATION OF PLATES.

### PLATE IV.

- Fig. 1. *Nesta citrina* Lin. var. *fragilis* n. var.
- Fig. 2. *Hemiplecta crenocarinata* n. sp.
- Fig. 3. *Hemiplecta densegranosa* n. sp.
- Fig. 4. *Macrochlamys novoguineensis* n. sp.
- Fig. 5. *Sitala gradata* n. sp.
- Fig. 6. *Sitala lorentzi* n. sp.
- Fig. 7. *Sitala fragilis* n. sp.
- Fig. 8. *Camaena gudei* n. sp.

### PLATE V.

- Fig. 1. *Trachiopsis torresiana* Hombr. & Jacq. var. *dautzenbergi* n. var.
- Fig. 2. *Chloritis beatrix* Tapp. Can. var. *depressa* n. var.
- Fig. 3. *Papuina lorentzi* n. sp.
- Fig. 4. *Papuina hellwigensis* n. sp.
- Fig. 5. *Melania lorentzi* n. sp.
- Fig. 6. *Melania alkmaarensis* n. sp.
- Fig. 7. *Melania similis* n. sp.
- Fig. 8. *Melania striatissima* n. sp.
- Fig. 9. *Lagochilus gudei* n. sp.
- Fig. 10. *Adelomorpha lorentzi* n. sp.

### PLATE VI.

- Fig. 1. *Adelomorpha campanulata* n. sp.
- Fig. 2. *Aphanoconia leucostomoides* n. sp.
- Fig. 3. *Aphanoconia rufo-unistrigata* n. sp.
- Fig. 4. *Neritina transversecostata* n. sp., 4a smaller specimen to show the ribs.
- Fig. 5. *Neritina simplex* n. sp.
- Fig. 6. *Neritina wallacei* Dohrn var. *spinosa* n. var.
- Fig. 7. *Cyrena kochi* n. sp.
- Fig. 8. *Batissa albertisii* Tapp. Can. var. *crassior* n. var.

### PLATE VII.

- Fig. 1. *Cyrena subtriangula* n. sp.
- Fig. 2. *Virgus lorentzi* n. sp.
- Fig. 3. *Nausitoria hedleyi* n. sp., 3b and 3c palettes, 3b external, 3c internal side.

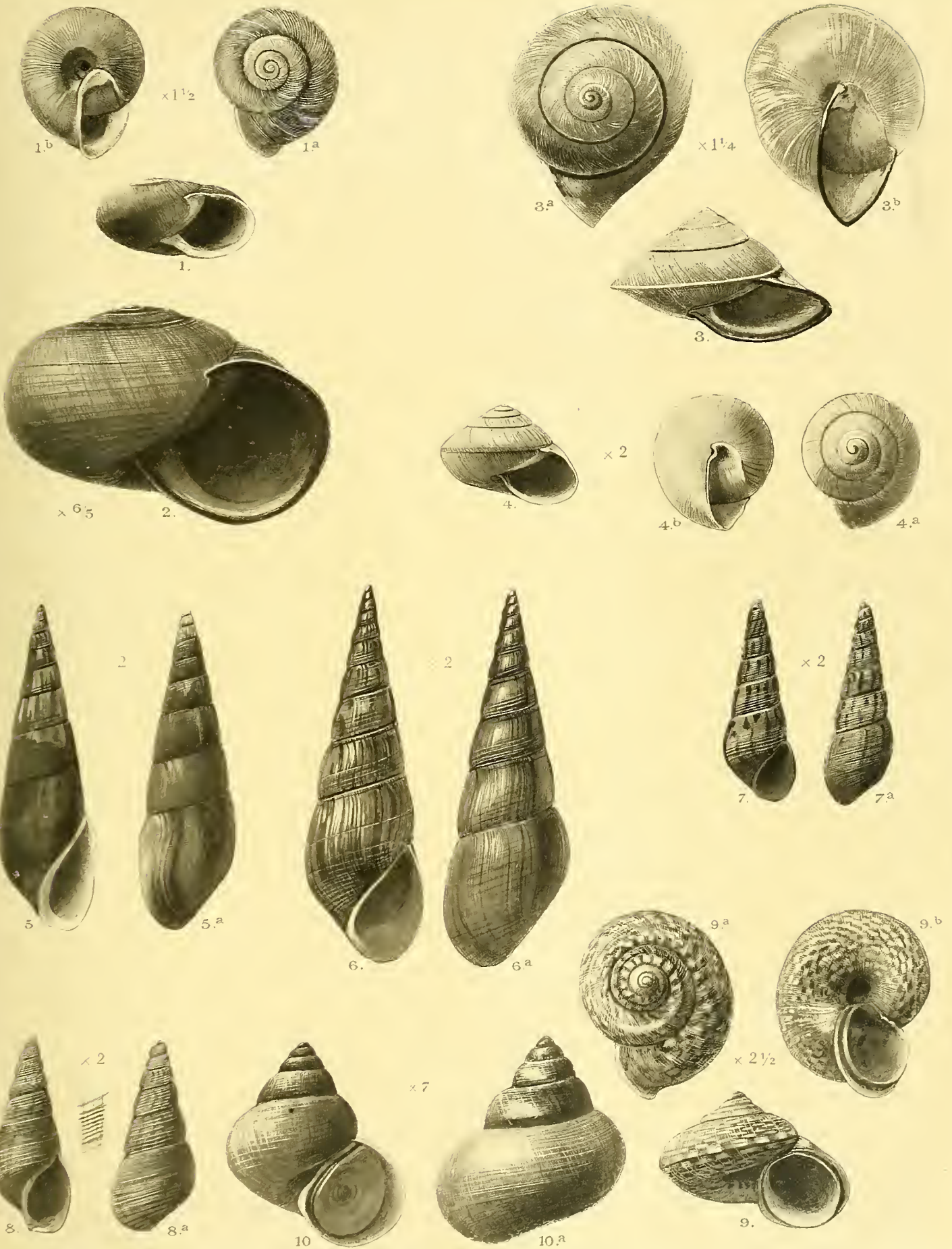
### PLATE VIII.

- Fig. 1. *Cymia carinifera* Lam. var. *simplex* n. var.
- Fig. 2. *Cymia dubia* n. sp.
- Fig. 3. *Cerithidea multicostrata* n. sp.





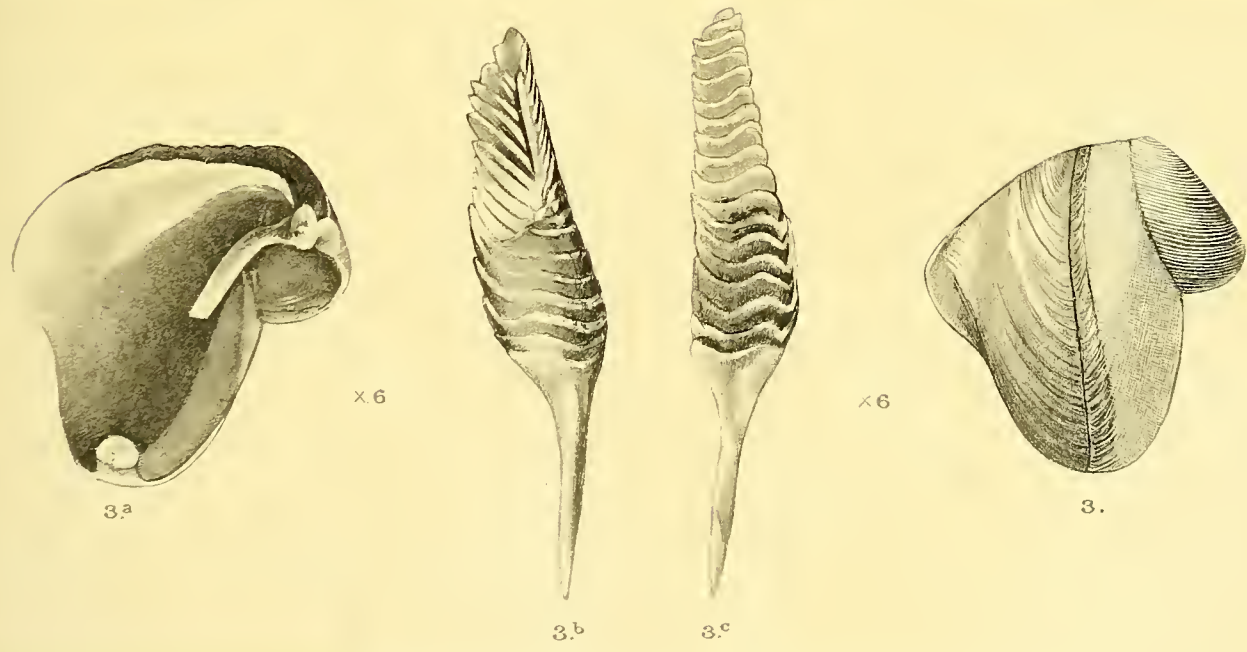
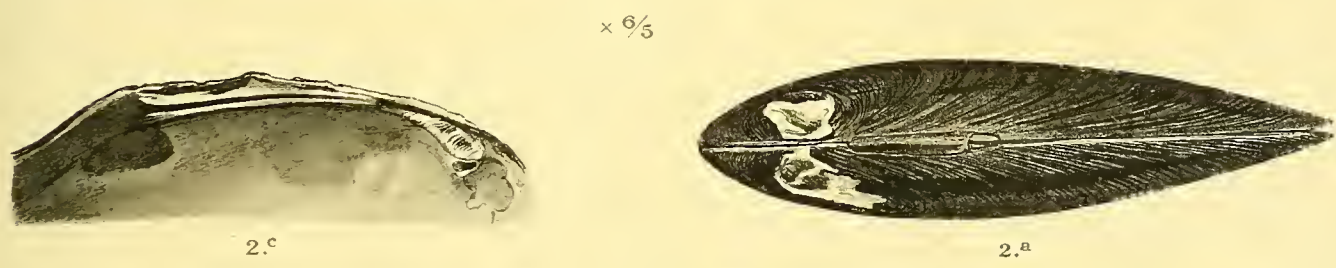
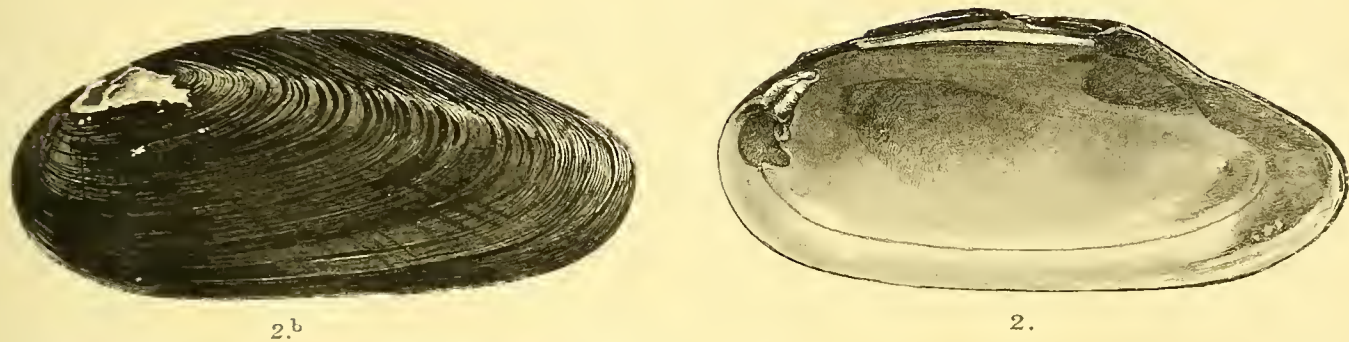
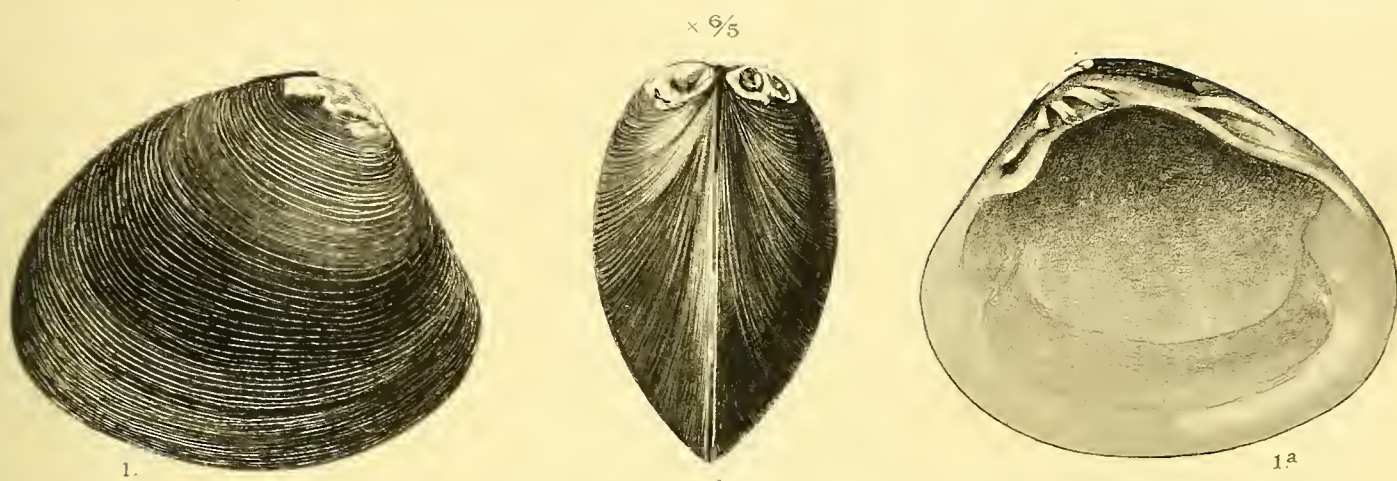


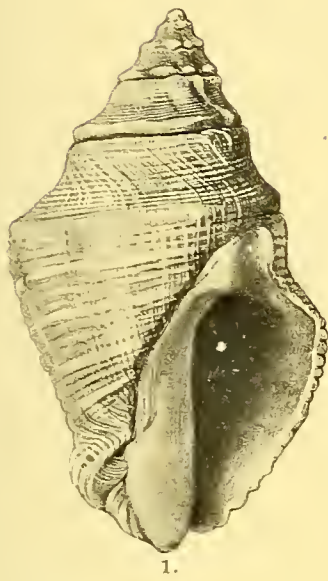




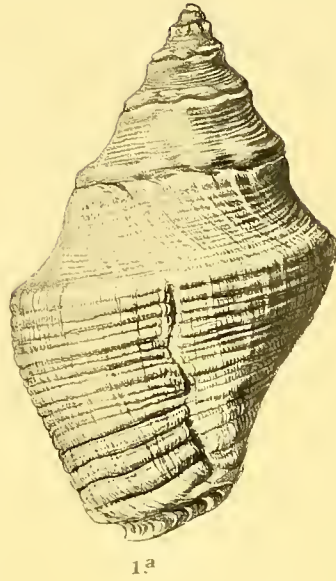








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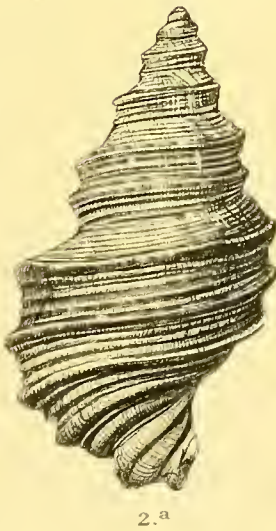


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3.



x 2



2<sup>a</sup>



x 2

3<sup>a</sup>